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USSR Report

INTERNATIONAL ECONOMIC RELATIONS

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ASIA

TECHNOLOGY TRANSFER TO INDIA DISCUSSED

Moscow FOREIGN TRADE in English No 1, Jan 85 pp 13-19

Article by Stanislav Simanovsky, Cand. Sc. (Econ.)

Excerpts

India, during the years of its independence (since 1947), has achieved substantial successes in developing its economy, positively disproving the traditional notion about it being a backward, underdeveloped country. Today India occupies the 12th place in the world in the volume of industrial products, the third place (after the USSR and the USA) in the number of engineering-technical staff and is a competent member of the "space club" countries launching their own satellites into space.

The country's economic potential has grown considerably. Thus India's gross internal output increased 3.1 times, the industrial output volume—five times and agricultural production—2.1 times. The achievements made in basic industrial sectors were especially impressive. In the period from 1950 to 1982 steel output grew from 1 to 10.7 million tons per year, mineral fertilizers—from 60,000 up to 4.3 million tons, coal—from 32 million to 134 million tons, cement—from 2.7 million up to 22.2 million tons. Petroleum extracting, petroleum refining and petrochemical industries were started from scratch.

The government's policy aimed at creating and strengthening the public sector of the country and all-round cooperation with the socialist countries, primarily the USSR, was a decisive factor in India's economic progress. India is now one of the socialist countries' largest partners in foreign trade with the developing countries.

Today the CMEA member-countries have accumulated substantial positive experience in their cooperation with India vividly illustrating the true democratic character of interrelations between states with different social systems and levels of economic development on a just, equitable and mutually beneficial basis. The socialist countries are helping the newly-free states to comprehensively master the advances of the modern scientific and technical revolution which in particular envisages the transfer of technology that will intensify the production of the developing countries' basic economic sectors, create a research base and the staff potential of national science and technology.

The example of the CMEA member-countries' economic, scientific and technical cooperation with India at its all stages confirms the validity and effectiveness of approach assuring consecutive development of all leading economic sectors within the framework of a long-term comprehensive programme and national scientific, technical and socio-economic progress.

The existing and constantly improving mechanism of the CMEA member-countries' cooperation with India has enabled it to quickly solve arising problems with account of the participating countries' interests and promote a stable and mutually beneficial partnership also in "know-how" exchange.

Experience gained from state planning is put to good use when elaborating and realizing India's national scientific and technical policy. The National Committee for Science and Technology set up under India's Government defines the main content of scientific and technical development programmes which are a constituent of the country's five-year plans. These programmes place appropriate stress on priority problems and subject themes in cooperation with the socialist countries. Here the urgency is placed on fundamental researches promoting accomplishment of important tasks advancing the country's socio-economic development.

Under the 1972 Soviet-Indian agreement on scientific and technical cooperation with the Tiruchirappalli research centre (the state Tamil Nadu) Indian scientists are successfully creating MHD-generators with the assistance of the USSR Academy of Sciences High Temperatures Institute. Now the centre has a 15,000 kW experimental installation; the results of its operation

will be used for constructing India's first industrial MHD electric power station. The main assemblies of technological equipment manufactured by India were tested in the USSR. These researches have put India among the first countries mastering magnetohydrodynamic technology, and putting new power sources into practical use.

In the state of Gujarat with the GDR's assistance Asia's first research centre for studying upper atmosphere layers was constructed and fitted with modern equipment. The obtained results are of great importance for compiling weather forecasts of the country's main agricultural regions.

From its access to the Soviet space technology India attained substantial successes in creating and launching artificial satellites and their utilization for geological, geophysical and meteorological researches of great significance for the country's economy. Cooperation in this sphere began as far back as the 1960s when Soviet specialists helped construct a rocket launching station in Thumba (the Kerala state) initially for Soviet meteorological rockets under a programme of experiments planned by the Indian Space Research Organization and the meteorological department under India's Government jointly with the USSR State Committee for Hydrometeorology and Environmental Control.

The launching of Indian satellites by Soviet rocket carriers became the next stage of researches into the central and upper atmospheres. In 1975 with the USSR's assistance the first Indian satellite, Aryabhata, and in 1979 and 1981 two other satellites, Bhaskara-I and Bhaskara-II, were launched. Information obtained from these satellites was used by over 20 Indian organizations in various economic spheres.

The experience accumulated by Indian scientists and specialists in cooperation with the USSR helped them realize a programme for constructing their own rocket-carriers which will make India fully independent in manufacturing and launching space crafts already by the end of the 1980s. Under this programme in 1981 the Indian rocket, Ariane, launched an experimental remote sensing satellite into orbit. In 1980 and 1981 a four-stage rocket operating on solid fuel was used to launch two 40 kg Rohini type satellites. A more powerful rocket-carrier capable of launching 100 to 1000-kg space objects into orbit is being developed.

India received substantial volumes of Soviet "know-how" on operating equipment for ground launching complexes, stations for tracking and controlling space flights installed in Thumba, Bangalore, Sriharikota and Ahmadabad.

Indian cosmonauts R. Sharma and R. Malhotra had their all-round training in the USSR which resulted in the successful flight of the Soviet-Indian crew (Yu. Malyshev, G. Strekalov and R. Sharma) at the Salyut-7-Soyuz complex in April 1984. They completed a wide programme of geophysical, technological and other experiments which are of great practical importance, in particular, for making maps of land use, studying the condition of forests, internal water resources and crop regulation.

It is interesting to note that when the Insat-I communications satellite launched by India in cooperation with the USA from Cape Canaveral, 1982, failed and badly affected the country's TV network India applied to the USSR for help. In autumn 1982 an agreement was signed under which a TV relay unit installed on a Soviet Raduga series communications satellite (the international index—Statcionar-3) began working for the Indian TV system. A specific feature of this agreement is that India leased the Statcionar-3 satellite, i.e. made use of such an effective form of technology transfer as leasing.

When the CMEA member-countries transfer technology to India they attach great importance to the creation and expansion of national material and technical base for assisting its R & D. Thus, the Soviet Union's assistance in setting up India's central design bureau led to the establishment of the state corporation for designing metallurgical and mechanical engineering enterprises, now the country's largest design and consulting organization dealing with all design work in this sphere. In particular, this organization in cooperation with the USSR's design institutes worked out the detailed design of the giant iron-and-steel complex in Bokaro and contractor designs for the third stage of the Bhilai complex. The Soviet Union is helping India establish a research centre for the aluminium industry, an institute for drilling technology and an institute for oil-field exploitation. To carry out this research at the two latter institutes 400 Indian oil specialists received instruction in the USSR.

Besides the above projects of the scientific and technical base, the USSR under an arrangement with UNESCO and India's government rendered and still renders India assistance in setting up and organizing the work of ten more scientific centres.

Czechoslovakia constructed and equipped a scientific research institute of metal-cutting machine tools in Bangalore. A group of Indian specialists had special training in Czechoslovakia and Czechoslovak experts work as advisers at this institute. Poland organized a design bureau for the shipbuilding industry in India.

Without first having an effective educational system it is impossible to form and successfully use the national scientific, research, engineering and technical potential capable of applying the received "know-how" and fulfilling its own independent R & D meeting the requirements of the national economy.

In the CMEA member-countries' cooperation with India there are various forms of technology transfer for the educational system and for training national specialists ranging from assistance in working out educational programmes to constructing educational institutions, equipping and supplying them with necessary devices and training appliances, providing with lecturers and instructors. For instance, to assure the metallurgical industry's national engineering staff India concluded an agreement with the USSR in 1956, on constructing a Technological Institute in Bombay from the USSR's contributions made to the fund of the UN Development Programme. More than one hundred Soviet specialists and instructors participated in organizing the Institute's educational process. At present nearly 2,000 students and post-graduate students are being trained at the Institute at 26 specialized courses for such important industrial sectors as automatics, industrial electronics, mechanical engineering, metalworking etc. The Institute prepared over 7,000 specialists for work in India's economy. The specialists' educational level, according to the Western press, is equal to that of graduates from such capitalist countries' well-known technological educational centres as the Massachusetts Institute of Technology (USA) and Ecole polytechnique (France).³

Up to the present time the CMEA member-countries have helped construct in India more than ten other higher and secondary educational establishments. Furthermore, Indian students study at universities and

colleges in the socialist countries. Since 1956 nearly 2,000 Indian students and post-graduates have completed their education in the USSR. They are specialists in over 300 trades that India needs. More than one hundred young Indian specialists annually graduate from Soviet leading educational establishments.

The CMEA member-countries use very varied forms and methods of technology transfer to India necessary for creating and strengthening key economic sectors such as extraction of minerals, fuel and raw materials, ferrous and non-ferrous metallurgy, power engineering, the petrochemical and chemical industries, mechanical engineering, transport and the infrastructure. It is precisely in these industrial sectors that the largest economic projects are being built for which the CMEA member-countries transfer the greatest portion of "know-how." Industry and power engineering constitute over 70 per cent of the total volume of the CMEA member-countries' economic, scientific and technical cooperation with India.

Of great importance is technology transfer at the pre-investment stage for realizing large-scale projects connected with the evaluation of natural resources, explorations, etc. which on the whole is rather significant for solving the fuel-power and raw material problems facing the country. In the 1950s India extracted less than 500,000 tons of oil per year and Western experts stated that the country lacked oil reserves. Soviet geologists discovered a number of large oil- and gas-fields, for example in the East Indian state Assam, in the bay of Cambay, the Bombay area. Soviet specialists helped drill India's deepest experimental borehole (4,600 m) in the state of Tripura which confirmed the availability of oil and gas deposits.

Technology transfer in this sphere is performed by rendering consulting and engineering services, sending specialists, supplying necessary equipment (also on lease terms) and training local specialists.

Thanks to cooperation with the CMEA member-countries (the USSR and Romania) in discovering and developing new oil-fields in 1980-1983, India's self-provision with oil grew from 40 to 67 per cent. This was pointed out in the report of India's state commission for oil and gas. According to Soviet specialists' estimates the country's oil output will increase up to 50 million tons per year by the end of the 1980s.

Realization of these forecasts will further promote the development of the oil industry and a relevant complex of oil-refining and petrochemical industries. The Soviet Union assisted and is still giving great assistance in building and developing these sectors. The construction and commissioning of a large oil-refining and petrochemical complex (6 million tons per year) in Mathura (Uttar Pradesh state), May 1983, was one of the most important outcomes of the cooperation. The complex was constructed to a Soviet design and with Soviet specialists' assistance. The Soviet Union participated in exploring nearly 50 oil— and gas-fields, in building three oil refineries (total capacity over 12 million tons per year). Romania helped design and construct the Banghaigao oil refinery. Rendering consulting services Romanian specialists checked the designs of a number of technological installations developed by the Indian firm, Oil Engineers of India, for the Banghaigao petrochemical complex.

The CMEA member-countries transferred a considerable volume of "know-how" to India for the development of other sectors of the country's fuel and raw material complex. Thus, the USSR is helping construct the country's largest fuel and power engineering complex based on the VindhyaChal thermal power station using coal from the Singhrauli deposit. The first stage is to be completed by mid-1987. The complex will include an open-cast mine (capacity 14 million tons of coal per year), two concentrating mills and an electric power transmission line (length nearly 900 km). Hungary participated in opening the coal mines, in constructing an alumina factory and an iron ore dressing works. Poland assisted in constructing coking coal mines, and building ore-dressing complexes, the GDR—in developing lignite fields.

The CMEA member-countries', primarily the USSR's, "know-how" contribution to development of India's metallurgical industry, the foundation of which are the Bhilai and Bokaro giant iron-and-steel complexes constructed with Soviet assistance, is very significant. Indira Gandhi characterized this contribution in such words: "When we wanted to strengthen our industrial potential nobody in the West helped us and it was the Soviet Union that helped us create our metallurgical industry."⁴ At present the USSR is assisting the reconstruction of the Bhilai complex ex-

panding its productive capacities up to four million tons per year. Five modern continuous steel-casting plants are under construction. The USSR is supplying equipment for three of them and two others are being manufactured under a Soviet licence at the Ranchi heavy engineering works also constructed with USSR assistance. The fifth blast furnace and the second converter plant will soon be completed at the Bokaro complex and increase its capacity up to 5.5 million tons of steel per year.

An iron-and-steel works (rated capacity 3.4 million tons of steel per year) in Visakhapatnam (southern India, the state Andhra Pradesh) is at present the largest project being built. The complex was designed jointly by Soviet and Indian specialists and incorporated the world's latest achievements made in metallurgy. This is a complex industrial project comprising an iron-and-steel works, a power system, a network of railway and conveyer transport and highways, its own seaport and a living quarters for the builders and workers. The first stage of the enterprise (capacity 1.2 million tons of steel) is to be put into operation in late 1985 and the whole works—in late 1987. The complex's future scheduled output is up to 10 million tons of metal a year.

Other CMEA member-countries also actively participate in developing India's metallurgical complex. For instance, Hungary participated in designing and constructing a number of projects included in the Korba aluminium complex constructed with Soviet assistance, in constructing a factory manufacturing steel pipes for oil and gas pipelines. Poland built factories turning out refractories, steel and pig iron castings; Czechoslovakia—enterprises producing castings and forgings; Bulgaria provided "know-how" for manufacturing items by a backpressure casting method. The GDR assists in constructing India's first enterprise (in Jaipur) turning out 600,000 sq.m of copper foil and 490,000 sq.m of sheet steel with copper coating per year.

Owing to the progress achieved by India in cooperation with the CMEA member-countries in the metallurgical industry it substantially reduced its metal import. In 1983/84 fiscal year it amounted to 300,000 tons i.e. one million tons less than in the previous one.

A decisive factor advancing the developing countries' economies is having their own power base.

Thermal power stations in Chapur and Utrahn and power-distributing systems, the first power projects in independent India, were fully outfitted with Czechoslovak equipment. Czechoslovakia in cooperation with Indian specialists constructed the Ennore electric power station (330 MW). Indian engineers and technicians for this power station were trained at similar Czechoslovak thermal power stations. With Poland's assistance nine power projects have been and are being constructed. Romania participated in designing and building the Singhareni thermal power station (six 6 MW units). Some power projects were constructed with Hungary's assistance. The Soviet Union whose share is 3.5 million kW of the total capacity (5 million kW) of all power projects constructed and being constructed with the CMEA member-countries' assistance in India (over twenty of them) is India's largest partner among the socialist countries in transferring technology. The experience accumulated by the USSR in developing atomic power engineering was a great help in India's programme for constructing atomic power stations. The USSR's and other CMEA member-countries' cooperation with India in utilizing non-traditional energy sources for the needs of the country's economy is successfully progressing.

The country's need to develop its national extractive industry and power engineering was a powerful impetus for the creation and rapid progress of India's engineering industry which at present has reached a high level mostly due to the utilization of machinery and "know-how" received from the socialist community countries. Heavy machine building for the mining, oil-extracting and metallurgical industries, power engineering, transport and other industrial sectors constitute the foundation of the machine-building and metal-working industries. The Soviet Union plays an important role in its creation. It designed, supplied and constructed the Ranchi heavy engineering works, the Hardwar factory manufacturing heavy power engineering equipment, the Durgapur mining equipment factory and a number of other large economic projects. All in all with the USSR's technical assistance over 80 industrial and other projects have been constructed and are under construction in India, many of them now occupy leading places in the key sectors of India's economy.

Czechoslovakia transferred a substantial volume of "know-how" to develop India's mechanical engineering. Thus, the Škodaexport enterprise supplied India with a "turn-key" factory manufacturing turbo-generators for thermal power stations (capacity 900 MW per year) in Hyderabad. The firm Bharat Heavy Electricals Ltd. received a "turn-key" factory turning out high-pressure boilers in the town of Tiruchchirappalli. Jointly with the Indian firm, Bharat Heavy Plate and Vessels, a factory manufacturing high-pressure boilers was constructed in Visakhapatnam. Czechoslovak specialists chose the building site, designed the factory, undertook construction, start up and adjustment work and trained local personnel. A press-forging equipment plant was designed and constructed in Ranchi (the state Bihar) for the company Foundry Forge Plant. The contract on the construction of this enterprise is the largest in the history of Czechoslovak foreign trade. Besides, Czechoslovakia rendered assistance in constructing a heavy metal-cutting machine-tool factory in Ranchi, machine-tool factories in Ajmer, Delhi and Madras, and other enterprises. Altogether, with Czechoslovakia's technical assistance, over 60 industrial enterprises were built and are being constructed in India.

The successful functioning of India's industrial complex is to a great extent predetermined by the development of the country's infrastructure and its transport network. The "know-how" received from the socialist community countries is also widely used there. The USSR and Hungary, for instance, are actively participating in constructing an underground railway in Calcutta, the first in Asia. A characteristic present-day feature is the introduction of new forms of cooperation, particularly, with participation of the CMEA member-countries' international economic organizations. Thus to quicken equipment deliveries from the socialist community countries to India a corresponding agreement was signed between the socialist countries' organization Interlichter and a number of Indian freight and intermediary firms on transporting cargoes by the "river-sea" service between the Danube river ports and Bombay.

Over recent years India's government has been realizing a wide-scale programme for supplying the population with foodstuffs. India gives priority to

researches into agriculture in the budget expenditures allocated on science. Thirty-four central research institutes, an Agricultural Academy, over 20 agrarian universities and scores of laboratories and specialized centres, of which some were set up with the CMEA member-countries' assistance, work for the needs of agriculture. This cooperation envisages regular exchanges of new varieties of seeds, information and experience in combating agricultural pests and animal diseases. A wide-scale programme of cooperation in irrigation, biology and agricultural practices of cereal growing, cattle breeding, of mechanizing agricultural operations, processing agricultural produce and manufacturing mineral fertilizers etc. was coordinated. For instance, under this programme Bulgaria will assist India to create two large agro-industrial complexes and train specialists for agriculture; the GDR transferred "know-how" and taught personnel of the Hindustan Machine Tools factory how to manufacture milk-processing equipment, in the state of Gujarat the GDR assisted in building an enterprise manufacturing mineral fertilizers; Romania supplied three fertilizer producing installations; Czechoslovakia constructed complexes manufacturing mineral fertilizers in Talher, Rhamaghundam and Korba, a brewery and a tobacco factory in Nawabharat; Poland's foreign trade enterprise Polimex-Cekop rendered "know-how" and services on the assembly and adjustment of equipment and trained staff for manufacturing flour-milling machines; Hungary—"know-how" and equipment for enterprises producing vitamin concentrates, etc.

It is evident from the cited examples that the CMEA member-countries use diverse forms of technology transfer to develop India's industry and agriculture, including export of machinery and equipment and complete installations, "turn-key" projects, sale of licences, rendering of consulting and engineering services, training of local specialists, leasing of equipment, etc. Deliveries of machinery, equipment and complete enterprises and construction of "turn-key" projects are of special importance. In the 1960s-early 1970s the proportion of machinery and equipment in the CMEA member-countries' export to India amounted on average to 70-75 per cent, in subsequent years it fell somewhat due to the growth of the country's national mechanical engineering base. The scales of utilization of these main forms are seen from the fact

that India's industrial enterprises having Soviet equipment and constructed with the USSR's technical assistance now turn out 80 per cent of the country's metallurgical equipment, over 30 per cent of petroleum products, 38 per cent of steel and the major portion of coal.

The CMEA member-countries' technology transfer through licences is rapidly progressing. During the 1970s the volume of the USSR's export of licences to India grew more than ten times. These are mainly "accompanying" licences supplied with equipment deliveries, technical assistance and services. Among them, in particular, are licences for transferring Soviet technology to India under the contract on constructing a communication line using tropospheric scatter which entered service in November 1981, on manufacturing an installation blowing coal dust into a blast furnace for the Bhilai iron-and-steel complex, licences for manufacture, use and sale of compound coke-oven batteries and dry coke quenching installations, for manufacture of EKG-5A excavators and T-25 tractors at the Gaziabad factory, etc.

In the second half of the 1970s the GDR sold over 80 licences on technology and equipment for industry and agriculture to Indian firms including licences for production of rolling-contact bearings, agricultural machinery, a number of chemical products, and installations manufacturing oxygen and acetylene, etc.

Among the licences transferred to India by Czechoslovakia are large contract ones such as agreements on turning out: tractors at two factories constructed with Czechoslovakia's assistance which manufactured their 100,000th tractor in late 1982; the Yezdi (250 cm³) and Pioneer (60 cm³) motor cycles under the Jawa enterprise's licences at the Mysore motor cycle factory; tyres for vehicles and motor cycles in Mysore and Calcutta; shuttleless spinning frames, nozzle looms, black-and-white picture tubes, etc.

Hungary in the late 1970s sold licences to India which in Hungary's licence export to the developing countries amounted on average to 30-35 per cent. These are mostly accompanying licences for complete projects constructed or being constructed in India with Hungary's assistance: a factory manufacturing electric bulbs (licensor—the Tungsram association), a factory producing alumina, factories manufacturing medicines, vitamin B₁₂; licences for microwave commu-

nication facilities, men's shirts, leather footwear, etc. Other European CMEA member-countries are also active in exporting licences to India.

As to such form of technology transfer as the training of national personnel it is mainly being undertaken directly on site, during the construction of industrial projects, through the system of vocational training created with the CMEA member-countries' assistance and at enterprises in countries supplying the corresponding technology. Under Soviet-Indian cooperation alone over 100,000 Indian workers were taught trades most important for their country's economy thanks to the versatile forms of vocational training. In the cooperation period with the CMEA member-countries nearly 150,000 highly skilled workers and technicians were trained.

India's progress in forming and realizing its national scientific and technical policy mostly due to cooperation with the CMEA member-countries makes it more than a technology recipient but also an active supplier of it even in most advanced science-intensive sectors. Thus, at present India itself is rendering technical assistance to 16 developing countries in Asia and Africa. India's increased scientific, technical and economic potential has created favourable prerequisites for the country's active participation in the international division of labour, based on specialization and cooperation in production and the development of more comprehensive and effective cooperative forms of technology exchange. For example, the Indian firm Computronics, supplies the USSR with software for the ES computers on terms of counter-deliveries of finished computers by the All-Union Foreign Trade Association Electronorgtechnica.

Subcontract is another cooperative form of technology transfer in which India participates. For example using this form Indian enterprises in cooperation with the USSR and Czechoslovakia manufacture oil drilling equipment and excavators for third countries. In 1976 Soviet organizations signed a number of contracts with India on the delivery of electrolysis apparatus for an aluminium factory in Yugoslavia, travelling reloaders for Cuba's nickel factory, and coking equipment for iron-and-steel factories in Bulgaria and Egypt being constructed with Soviet assistance.

Joint-stock companies are one of the new organizational forms of cooperative technological ties between India and the CMEA member-countries which substantially accelerate the cycle of creation, introduction and utilization of technology aimed at developing the country's major economic sectors. For instance, Bulgaria has two such joint-stock enterprises with India (manufacturing albumin and gamma-globulin; on industrial fishing); the question of establishing several more Bulgarian-Indian joint-stock companies in engineering and the light industry is being coordinated; India also has joint enterprises with Hungary (manufacturing vitamin B₁₂ and other pharmaceutical preparations), with Czechoslovakia (construction of power engineering, mining and iron-and-steel enterprises, manufacture of diesel engines). The activity of such joint-stock companies in a number of cases spreads to other countries under trilateral cooperation. Thus, the Bulgarian-Indian-Nigerian joint-stock company Globfish deals with fishing, fish processing and sells its products on the developing countries' markets.

India's expanding participation in international technology exchange based on cooperative ties enhances India's export, improves its structure, raises the international prestige of Indian industrial products and helps solve the country's employment problem.

Technology exchange between the CMEA member-countries and India is a vivid example showing how the effective comprehensive mechanism of the international division of labour and utilization of its advantages under the total strategy of national socio-economic development can help overcome a developing country's scientific, technical and economic backwardness and strengthen its national independence and sovereignty.

¹ *Pravda*, September 22, 1982.

² The CMEA — Comments and Information. Novosti Press Agency Publishing House, No. 10(121), May 1983, p. 2-3.

³ *Newsweek*, December 5, 1983, p. 39.

⁴ *Pravda*, February 12, 1982.

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ASIA

TRADE, COOPERATION WITH INDIA REVIEWED

Moscow EKONOMICHESKAYA GAZETA in Russian No 46, Nov 84 p 21

[Article by V. Litvinenko, deputy chairman of the USSR State Committee for Foreign Economic Relations: "Cooperation Verified by Life: Trade and Economic Relations Between the USSR and India"]

[Excerpt] A Powerful Factor of Growth

The multifaceted relations with the countries of the socialist commonwealth have played an important role in the formation and strengthening of the economic independence of India and the development of a whole series of leading industries of its national economy. These relations are based on the principles of equality, mutual advantage, and non-interference in the internal affairs of one another. Noting the special significance of the assistance of the USSR for India in the development of key sectors of the economy, I.

Gandhi, in one of her addresses to the Soviet people, said: "You were the first who extended this assistance to us. It is precisely thanks to this assistance that India, which not long ago was a backward country and was unable to raise its voice, this very same India is now moving forward along the path of progress..."

With Soviet assistance 60 industrial and other national economic projects were created in India, and another 30 are in the stage of planning or construction. The projects built with the assistance of the USSR at the present time produce about 40 percent of the cast iron and steel, almost 80 percent of the metallurgical equipment, more than 40 percent of the mining equipment, more than 55 percent of the heavy power engineering equipment, 10 percent of the electric power, as well as a significant part of the oil, bituminous coal, instruments, medical preparations, and other products. The projects of Soviet-Indian co-operation constitute the industrial backbone of the state sector of the Indian economy.

The projects created with the assistance of the USSR are also of great social significance. Many of them have been constructed in remote and previously underdeveloped regions, which have now been converted into lively industrial centers with modern cities and settlements and a complete complex of social and cultural institutions.

With the assistance of the USSR, a total of more than 120,000 Indian specialists and highly-skilled workers and technicians were trained.

The business-like relations between the USSR and India encompass not only economic and technical cooperation, but also many other aspects of economic life. The indicator which summarizes them--the mutual trade turnover--increased from 0.5 billion rubles during the period 1956 to 1960 to 5.1 billion rubles during the past five-year-plan (1976-1980). And during the first 3 years of the current five-year-plan alone it exceeded 7.2 billion rubles. India is the largest trading partner of the USSR among the developing countries. In its turn, the USSR is the largest trading partner of India, which presently accounts for approximately 18 percent of Indian exports and more than 10 percent of its imports.

Along with machines and equipment for enterprises built with Soviet assistance, the USSR supplies India with a significant quantity of other technical equipment, as well as a number of fuel and raw material goods which it needs.

In its turn, India, in payment for the Soviet assistance and on the customary commercial basis, supplies the USSR with the products of its traditional export (tea, coffee, jute, fabrics, and others), as well as many other products of the young Indian industry, which is conducive to its further growth irrespective of the neocolonial policy of the Western monopolies and the unsteady business conditions of the capitalist market. It suffices to say that during the years 1981-1983 alone India exported machines, equipment and means of transportation for the sum of about 400 million rubles to the Soviet Union.

At the present time, the mutually advantageous business relations between the USSR and India are determined by the Long-Term Program of Economic, Trade and Scientific-Technical Cooperation, which was signed in 1979 and is aimed at the further development of the economic potential of India. Along with this, a lot of attention is given in the program to questions of the improvement of the work of industrial and other projects constructed in India with Soviet assistance, with a view to securing production growth in these enterprises, their mastering the output of new types of products, and increasing their economic efficiency. These goals are being attained through the perfection and introduction of the latest technical equipment, the modernization of equipment, the training of skilled personnel, and the extensive introduction of the achievements of science and technology into production. Such work is already being carried out in metallurgical plants in Bhilai and Bokaro, in machine building plants in Ranchi, Durgapur, and Hardwar, and at other projects.

Clear Prospects

In December 1983 the two sides agreed to work out "Basic Directions of Trade and Economic and Scientific-Technical Cooperation for the Period After 1990". They will become the basis for the adoption of a new Long-Term Program of Multifaceted Cooperation of the USSR and India, encompassing the beginning of the next century.

The development of the basic landmarks of cooperation for the long term in the development of primarily the sector of heavy industry and power engineering has become the first stage in this work. In particular, the construction of a

large alumina-aluminum complex in the state of Andhra Pradesh in India is being reviewed. Agreement in principle has been reached concerning the construction of the Kakhalgao [not further identified] Thermal Electric Power Plant with a capacity of 840 megawatts, projects of ferrous metallurgy, the oil and coal industry. A great deal of attention is being given to the development of new forms of cooperation, including the construction of enterprises on a compensation basis.

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ASIA

BRIEFS

USSR-DRA TRADE PROTOCOL--The volume of trade between the Democratic Republic of Afghanistan and the Soviet Union will grow 10-15 percent in the year of 1985 as compared with last year, a TASS correspondent was told by DRA Trade Minister Mohammad Khan Jalalar. He signed here today a protocol on trade between the two countries for the current year. From the Soviet side the protocol was signed by Nikolai Patolichhev, USSR foreign trade minister. In 1985, the Soviet Union is to supply the Democratic Republic of Afghanistan under the protocol with machinery and equipment, transport facilities, oil products, ferrous metals, chemical fertilizers, building materials, paper, timber materials, textiles, foodstuffs and industrial consumer goods. The Democratic Republic of Afghanistan will continue its supplies to the USSR of natural gas, carbamide, cotton fiber, sheep wool, small raw hides, seeds of oil bearing plants, fresh and dried fruit, nuts, preserved olives and other products. Talks are planned to be held soon on a new long-term trade agreement for the period from 1986 to 1990, the DRA trade minister said. [Excerpts] [Moscow APN DAILY REVIEW in English 18 Jan 85 [no page given]]

TRADE AGREEMENT WITH CHINA--On 30 November the signing of an agreement took place in Moscow concerning commodity exchange and payments between the governments of the USSR and the PRC for 1985. It envisages the further expansion of trade between the two countries both in terms of volume and in terms of the list of mutually supplied products. The Soviet Union supplies the PRC with machines and equipment, including means of transportation, light industry equipment, mining and oil equipment, building materials, chemical products, timber, and other types of industrial products. The PRC, in its turn, supplies the USSR with products of the mining industry, agriculture and animal husbandry, chemical products, as well as textile articles and various consumer products. The agreement was signed by the deputy minister of foreign trade, I. T. Grishin, and the representative of the minister of foreign economic relations and trade of the PRC (with the rank of deputy minister) Chen Jie. The head of the government trade delegation of the PRC and the members of the Chinese delegation were received by the USSR first deputy minister of foreign trade, N. D. Komarov. The PRC ambassador to the USSR, Yang Shouzheng, was present at the discussion and ceremony of the signing of the agreement. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 50, Dec 84 p 21] 8970

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CEMA/EASTERN EUROPE

CEMA STANDARDS DISCUSSED

Moscow SOVIET EXPORT in English No 5, 1984 p 21

[Article by A. A. Kirilenko, Cand. Sc. (Ec.), director, the CMEA Institute of Standardisation]

[Text]

International specialisation and co-production is an important form of international socialist labour division, a characteristic feature of socialist economic integration of the CMEA member-countries.

In trade among the CMEA countries, deliveries of specialised engineering products are growing faster than trade in machines and equipment as a whole. In 1971—1980, the export of specialised products within the CMEA grew 6.5 times as against the 3.5-time overall increase in engineering product deliveries.

Extensive standardisation and unification both at national level and on an international scale are vital prerequisites for the further deepening of international specialisation and co-production. This applies, above all, to the materials, components, assemblies and finished products best suited for the mass and large-lot production.

The CMEA member-states have signed an intergovernmental agreement—a Convention on the Application of the CMEA Standards. The CMEA Permanent Commission for Standardisation and an international standardisation research institute have been functioning since 1962. International standardisation policy is based on co-ordinated five-year and annual plans of operation. These plans are incorporated into national standardisation plans. As many as 4,346 CMEA standards are registered as of January 1, 1984. Based on the results of standardisation within the framework of the UN Economic Commission for Europe and other organisations which adopt the best international EA standards have an important role to play in firms involved in economic and technical co-operation in the CMEA member-states. They constitute

the normative-technical basis of international specialisation and co-production within the CMEA, are used in our countries' national economy and foreign trade.

Contractual forms of co-operation figure prominently in international specialisation practice. The CMEA countries—signatories to the Convention on the Application of the CMEA Standards—have pledged to ensure that they find mention in agreements on economic, scientific and technical co-operation. The Convention has established a uniform mode of using the standards based on the so called reference method. This means that in co-operation agreements, contracts and treaties detailed descriptions of product specifications and indices are replaced by references to the standards which contain the specifications and quality indices of the given products.

All the CMEA standards can be subdivided into three groups: product standards, general technical standards and test method standards.

Product standards contain technical norms and specifications, dimensions, parameters, quality indices, interchangeability and compatibility requirements, etc. Most of the standards have been developed for the key spheres of co-operation among the CMEA member-states (mechanical engineering, metalworking, power engineering, chemistry, radio and electrical engineering, consumer goods production, etc.).

The utmost importance is attached to the establishment of progressive CMEA standards for items which are objects of specialised and joint production under long-term purpose-oriented co-operation programmes and multilateral agreements.

In 1983, for instance, standards applying to these items constituted 70 per cent of the CMEA's total.

Much emphasis is placed on the development of standards to be used in such top-priority areas of intra-CMEA specialisation and co-production as robotics, microprocessor technology, the development of advanced machines and equipment for metalworking, mining and agriculture.

The CMEA's general technical standards include those of the CMEA Unified Design Plans and Specifications System (UDPSS), of the CMEA Unified Allowances and Fits System (UAFS), as well as standards in the fields of safety engineering, environmental protection, etc.

The CMEA testing standards establish the sequence of testing (control, analysis, measurement) operations, provide their description, the record keeping procedure, etc. They constitute the normative-technical basis for the international certification of the CMEA countries' products.

The CMEA standard development engineers give a thorough analysis of the technical standard and quality of the product being standardised, and bring the CMEA standards up to date with the latest achievements of science and technology. The CMEA standards are periodically checked upon and updated.

The above-mentioned CMEA standards find their specific reflection in co-operation agreements among the CMEA member-states.

· The CMEA standards applying to the products supplied are directly referred to in agreements, treaties and contracts.

Many CMEA standards cited in agreements and contracts find indirect use in contractual relations.

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CEMA/EASTERN EUROPE

TECHNICAL, ECONOMIC COOPERATION WITH CUBA REVIEWED

Moscow SOVIET EXPORT in English No 5, 1984 p 14

[Article by V. I. Zaikin, Deputy Economic Counsellor, USSR Embassy in the Republic of Cuba]

[Text]

Economic and technical co-operation between the USSR and Cuba is an example of new type of international relations which serve the interests and requirements of both countries' national economies to the greatest extent. The first agreements, signed in February, 1960, laid a firm foundation for economic, scientific and technical co-operation. This co-operation gained in scope over the years until today there is hardly a branch of Cuba's economy that has not benefitted from it.

Deliveries of complete plant from the USSR are growing from year to year. In 1961—1965 our technical aid to Cuba was valued at 144 million roubles, whereas in 1976—1980 this figure grew more than 8-fold to exceed 1,000 million roubles. Tens of industrial plants and other facilities have been built, reconstructed and equipped in various branches of Cuba's economy with Soviet assistance. They account for over 10% of Cuba's gross national product and produce 95% of Cuba's steel; 100% rolled stock; 45% electric power; 80% nitrogen fertilizers; 60% building materials; 50% fabrics and yarn; 100% cane harvesters, TV-sets and radios.

The sugar industry, a leading branch of the Cuban national economy, is one of the main spheres of Soviet-Cuban economic cooperation. The Soviet Union helps Cuba modernize and expand the sugar refineries already in operation, build new ones, and

reconstruct railway transport in this field. Specialised plants now under construction will meet the sugar industry's basic equipment and spares requirements. Over 100 out of the 152 sugar refineries, have been reconstructed with the result that the industry's sugar cane processing capacity has increased 20 per cent. Four new sugar refineries have gone into operation. In 1981—1985 the USSR will render Cuba assistance in building another 11 large sugar refineries, in reconstructing 44, and in building a plant to produce 3,000 sugar-carrying trailers a year.

Mention should be made of other products of Soviet-Cuban co-operation which have an important role to play in Cuba's economy. These are the thermal power stations in Mariel (600 MW) and Renté (400 MW); the power transmission lines of an integrated power system enabling more efficient use to be made of electricity generating plant; the Jose Marti metallurgical works whose capacity has increased after modernisation to 350,000 tons of steel and 300,000 tons of rolled stock a year; the reconstructed nickel works in Moa and Nicaro; the nitrogen fertilizer plant in Nuevitas producing 200,000 tons of ammonium nitrate and 35,000 tons of urea a year, and a mixed fertilizer plant in Felton with an output capacity of 360,000 tons; the first phase of Cuba's (and Latin America's, for that matter) largest textile mill in Santiago de Cuba with an output capacity of 80 million m² of fabrics a year; the cane harvester plant in Holguin which has already produced 3,000 machines (rated capacity: 600 harvesters a year). This has made it possible to mechanise cane harvesting over 50% of the plantation area and to reduce the number of cane cutters from 350,000 in 1970 to 85,000 in 1984. The country's total oil refining capacity has grown considerably.

The 1981 Intergovernmental Agreement

on Economic and Technical Co-operation Between the USSR and the Republic of Cuba for 1981—1985 gave a fresh impulse to Soviet-Cuban economic relations. It provides for an increase in the volume of Soviet technical assistance to Cuba of 1.8 times as compared with the previous five-year period. The Soviet Union helps Cuba develop its electric power engineering, sugar, oil refining, chemical and food industries, ferrous and non-ferrous metallurgy, engineering, transport and telecommunications, and train its national personnel.

A number of large industrial installations built in Cuba with Soviet assistance will go into operation in the current five-year period. They include the nickel plant at Punta Gorda which will almost double Cuba's output of nickel-containing products; the Balance cotton spinning mill near Havana with an output capacity of 15,000 tons of yarn a year; large engine and truck repair works at Santiago de Cuba and Santa Clara. Ground has been broken for an atomic power station with two power units of 850 MW total output capacity. At present the Soviet Union is rendering assistance to Cuba in building over 200 installations in various branches of its national economy.

The Soviet Union is giving ever greater help to Cuba in training its national personnel. Plans are afoot for setting up 185 new training centres and for training 375,000 experts in various fields. By 1985, Cuba will have over 300 training centres set up in co-operation with Soviet organisations. This will make it possible to solve the problem of training personnel for the national economy.

Subsequent years will see the further development of Soviet-Cuban economic and technical co-operation, which will contribute towards the solution of major economic problems of the two countries.

CEMA/EASTERN EUROPE

TRADE PROTOCOL WITH CZECHOSLOVAKIA SIGNED

Moscow EKONOMICHESKAYA GAZETA in Russian No 50, Dec 84 p 20

[TASS article: "Fruitful Cooperation"]

[Text] Discussions between state trade delegations of the USSR and the Czechoslovak Socialist Republic were successfully completed in Moscow, and on 30 November a protocol was signed in regard to the commodity exchange between the two countries in 1985.

The obligations of the two sides, emanating from the long-term trade agreement on commodity exchange and payments between the USSR and the Czechoslovak Socialist Republic for 1981-1985 and other economic agreements were taken into account; and the positive results of economic cooperation attained in the course of the execution of the Comprehensive Program for the Further Intensification and Improvement of Cooperation and the Development of Socialist Economic Integration of the CEMA Member Countries are being consolidated.

In the preparation of the protocol, the two sides were guided by the decisions adopted by the Economic Conference of the CEMA member countries.

The volume of commodity turnover being projected will exceed 13 billion rubles and will increase by more than 6 percent by comparison with the current year. Czechoslovakia, as before, occupies a leading role in the foreign trade of the Soviet Union, and the USSR remains the basic trading partner of the Czechoslovak Socialist Republic.

Plans call for the further development of specialization and cooperation of production, mainly in machine building. In connection with this, the volumes of mutually supplied machines and equipment will increase at the most rapid rates in 1985.

Metal-removal machine tools, electrotechnical, construction and road equipment, tractors and agricultural machines, instruments, and many other machines and equipment will be supplied from the USSR to the Czechoslovak Socialist Republic.

Cooperation will continue in the construction of nuclear power plants, the reconstruction and modernization of a number of metallurgical and chemical plants, and the construction of mines in the Czechoslovak Socialist Republic, the Prague subway, and some other projects important for the national economy of the Czechoslovak Socialist Republic.

Projections call for the delivery of the basic types of energy sources and raw materials in large volumes, including oil and oil products, bituminous coal, natural gas, electric power, iron-containing raw material, ferrous and nonferrous metals, manganese and chromium ores, mineral fertilizers, cotton, asbestos, many chemical products, timber, a significant quantity of electrical household equipment, watches, sewing machines and other commodities.

Machines and equipment will occupy the chief place in the deliveries from the Czechoslovak Socialist Republic, including equipment which will be conducive to the fulfillment of the Food Program. In particular, equipment will be supplied for the plants for the production of carbamate in Severodonetsk and Odessa, equipment for 4 grain elevators for 50,000 tons of grain each, and equipment for the outfitting of meat and dairy industry plants. Plans call for the supply of equipment for the modernization of a leather plant in Yerevan, the Voroshilovgrad Footwear Production Association, and a knitted fabric mill in Zhodino.

Projections call for an increase in the deliveries of consumer goods, including footwear, sewn and knitted goods, fabrics, leather goods, furniture, and medicines.

Also planned are deliveries of steel pipes, magnesite, clinkers, dyes, a number of chemical goods and other raw materials, in which the national economy of the USSR is interested.

Agreement was reached concerning the fact that the two sides will continue to work for the further expansion of commodity exchange in 1985.

The protocol was signed, upon authorization by the USSR government, by the minister of foreign trade, N. S. Patolichev, and, by authorization of the government of the Czechoslovak Socialist Republic, by the minister of foreign trade, B. Urban.

[TASS]

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CEMA/EASTERN EUROPE

HUNGARIAN TRADE, COOPERATION DISCUSSED

Moscow EKONOMICHESKAYA GAZETA in Russian No 51, Dec 84 p 20

[Article by Dr Iozhef Garam, editor-in-chief of the Hungarian economic daily FIDELYE: "USSR--Hungarian People's Republic: Intensification of Production Cooperation"]

[Text] The economic and scientific-technical cooperation between Hungary and the Soviet Union is acquiring an increasingly large scale with every year and is being enriched by new forms and content. This finds its reflection in the intensification of production cooperation and the development of direct relations between the enterprises of the two countries.

The scope which the economic relations of our country with the Soviet Union have acquired is eloquently indicated in particular by the fact that at present one-third of the total foreign trade turnover of the Hungarian People's Republic falls to the share of the USSR. In 1983 the volume of Hungarian-Soviet trade exceeded 8 billion rubles and, as is expected, in the current year will increase by 7.5 percent.

A characteristic trait of the development of trade between Hungary and the Soviet Union is the fact that in annually signed protocols are set forth the directions for the further development of production cooperation and specialization, taking into account the understandings stated in the corresponding long-term agreements. As the result of their realization, 34 percent of the Hungarian exports to the USSR are made up of articles manufactured on the basis of cooperation and specialization. The proportion of the products of machine building in this volume reaches 85 percent.

Besides multilateral agreements of the CEMA countries concerning production cooperation and specialization, bilateral agreements play a significant role in the foreign economic relations of Hungary. Beginning in 1970, almost 40 agreements have been concluded with the USSR concerning production cooperation and specialization, mutual deliveries of articles produced on this basis, as well as concerning scientific-technical collaboration. Among these agreements, 32 concern industrial production. In the main they were signed at the level of ministries. In addition, a number of agreements have been concluded directly between enterprises. The indicated agreements mainly set forth the mutual deliveries of products, but among them are also those which provide for the development of joint production.

In terms of volume and value of the mutual deliveries of products produced under specialization and subcontracting arrangements, motor vehicle construction aids occupy first place. Hungarian and Soviet enterprises, for example, exchange completing assemblies and parts for the production of buses and cars, as well as finished products of motor vehicle production.

For example, our foreign trade organization MOGYURT [not further identified], during the current five-year-plan, annually supplies 7,300 Ikarus buses to the USSR. In its turn, the All-Union Foreign Trade Association Avtoeksport [for the export and import of motor vehicles and agricultural machinery] supplies to Hungary various types of trucks, microbuses, trolleybuses, motorcycles, mopeds, bicycles, ambulances, and other specialized machines.

In conformity with the agreement on production cooperation and specialization, the volume of mutual deliveries of completing assemblies and parts for motor vehicles is constantly growing. MOGYURT supplies rear axles, produced by the Raba Plant, needed for the production of buses and trolleybuses in the USSR, and we receive pumps for steering hydraulics and cardan shaft assemblies. On the agenda is the question of the expansion of cooperation in motor vehicle construction. In particular, the possibilities of the joint production of a wedge brake system are being studied. MOGYURT is ready to deliver to the USSR brake chambers and brake blocks in order to receive finished brake assemblies from its Soviet partners. The chief participants in the agreement concerning cooperation in the production of completing assemblies and parts for motor vehicle production on the Hungarian side are the Raba and Ikarus plants, the Chepel'skiy Motor Vehicle Plant, and a number of others, and on the Soviet side--the Likino Bus Plant, the Kama Motor Vehicle Plant, the Moscow Automobile Plant imeni I. A. Likhachev, the Belorussian Automobile Plant, the Gorkiy Motor Vehicle Works, and the plant for microbuses in Latvia.

The Chepel'skiy Motor Vehicle Plant and the L'vov Bus Plant, on the basis of a cooperative arrangement, are carrying out the production of hydromechanical boxes of transmissions for buses. The Hungarian enterprise supplies the mechanical parts, the gears and shafts. At the Lv'ov Bus Plant they are used for the completion of transmission boxes, which are then supplied to Hungary.

The cooperative relations of Hungarian enterprises with the Volga Automobile Plant are growing stronger. For it, Hungary supplies components, including instrument panels, windshield wipers, distributors, ignition switches, horns and locks. Cars--13,000 to 15,000 a year--are supplied to us from Tol'yatti. In addition, we receive Lada automobiles through other channels of traditional commodity exchange. In Hungary work is now being done in the direction of increasing the volume of deliveries of component assemblies and parts to the USSR, so as to have the possibility of purchasing more automobiles of the Lada type. Steps are being taken as well for the organization of analogous cooperation with the Zaporozhets Plant and the purchase, on this basis, of cars of new modification.

Cooperative relations are being developed between the Hungarian Mekhanikai Myuvek Mechanical Combine, which supplies electrical units for high-pressure dyeing machines to the Soviet Union, and one of the Vilnius plants, which sends

about 20 different assemblies and parts to the Hungarian People's Republic. Both enterprises carry out the assembling of finished products and their sale in their market. Cooperation in the development of the technological processes of the production of varnishes and paints encompasses questions of the manufacture of the machines and equipment needed for this. In particular, this concerns the creation of lines for the production of enamel and paints.

In the sphere of the machine-tool industry, the partners of the Soviet enterprises in regard to specialization and cooperation are the SIM [not further identified] Combine, the Chepel'skiy Machine-Tool Plant, and the DIGEP [not further identified] and Danuviya [not further identified] plants. They supply lathes to the USSR, including lathes with numerical program control, radial drilling machines, some types of press-forging plants, and hydraulic systems. At the same time, Hungary receives many kinds of products of the Soviet machine-tool industry. In the past few years, there has been a significant interest in the robots produced in the USSR. Preliminary steps have been taken to equip the production sections of our machine-tool enterprises with them.

Of special significance for us is production cooperation and specialization in the production of communication facilities and electronic equipment. The co-operation in the sphere of electronics is regulated by several agreements concerning specialization and cooperation. A number of new agreements are in the stage of development. Within the limits of the CEMA program for the development of computer facilities, the Hungarian People's Republic is producing and supplying small computers, data processing equipment, as well as peripheral equipment for large computers being produced in the USSR. From the Soviet Union we receive computers of medium and large capacity.

Of constantly growing significance for the industry of Hungary is the cooperation with the enterprises of the Soviet Union in the sphere of microelectronics. In the beginning it consisted only in the purchase of such technology in the USSR. Through the joint efforts of specialists of the two countries, the electronics elements were determined whose import from the capitalist countries for foreign exchange could be replaced by articles of Soviet enterprises. For the development of their production, we have begun to supply to the Soviet Union the necessary modern, highly-productive automated and program-controlled test equipment. According to available calculations, the import of Soviet electronics parts during 1981-1985 will increase fourfold compared to the preceding five-year-plan. Within the framework of the program for the development of microelectronics, a decision has been adopted in Hungary to create, on the basis of a Soviet license, the output of microelectronic elements. It has already begun in an enterprise for microelectronics. In connection with this, there is an increase in the demand for purchases of basic materials in the USSR, including super-pure materials and chemicals.

The effect of the economic cooperation of the two countries, although it is measured in rubles and forints, can in essence not be defined only in monetary terms. For both countries, but especially for the Hungarian People's Republic, this cooperation signifies economic possibilities of such a magnitude as have never existed in its history.

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CEMA/EASTERN EUROPE

COOPERATION WITH HUNGARY REVIEWED

Moscow FOREIGN TRADE in English No 1, Jan 85 pp 39-40

/Article by Alexei Krokhotkin, executive secretary of the Soviet part of the Intergovernmental Soviet-Hungarian Commission for Economic, Scientific and Technical Cooperation/

/Text/

At a working meeting, held in Moscow September 17-19, 1984, the chairmen of the national parts of the Intergovernmental Soviet-Hungarian Commission for Economic, Scientific and Technical Cooperation considered a wide range of questions concerning the development of relations between the USSR and Hungary in economy, science and technology.

Central in the meeting's discussions was an analysis of the progress made in implementing economic agreements reached earlier. Thorough consideration of the materials submitted showed that the realization of the assignments set by the two countries' leaders in the pertinent documents had enabled both countries to further develop Soviet-Hungarian cooperation in different spheres of their economies. Specifically the sides signed a Protocol on prolonging up to 1990 and expanding cooperation in the production of alumina and

aluminium and on mutual shipments of these goods. Under the Protocol Hungary will increase her deliveries of alumina to the USSR from 330,000 to 530,000 tons for processing at Soviet enterprises, and the aluminium obtained will be reshipped to Hungary, except the part taken as payment in kind for processing.

This is not the first year of Soviet-Hungarian profitable alumina-aluminium cooperation. Hungary, as is known, lacks energy carriers. Processing the alumina at Soviet enterprises enables Hungary to increase aluminium stocks without straining her deficit electricity resources. The Soviet Union, in its turn, is also interested in developing cooperation on this matter as it is of help in partly meeting its requirements for aluminium without resorting to alumina imports from the capitalist countries.

Considerable successes have been achieved in expanding coop-

eration in building and reconstructing industrial enterprises in both countries. Over the first three years of the current five-year plan period (1981-1985) 16 projects and separate installations have been put into operation in Hungary with the technical assistance of Soviet organizations, among them: two power units (each 440 MW) at the Paks atomic power station, an oxygen-converter plant (capacity one million tons of steel a year) at the Danube metallurgical complex, the first stages of two large mining projects (output 4.2 million tons of brown coal per annum and 500,000 tons of bauxites), etc. Hungarian organizations help build in the USSR a poultry plant (productivity 10.6 million broilers a year) and 21 enterprises for repairing radio and TV apparatus. Reconstruction by Hungary of the Lvov and Tskhneti sewing factories was completed last year. Work is under way on re-equipping nine domestic refrigerator-producing plants, some workshops at the Parizhskaya Komsomola shoe-making factory and the Krasnodar furniture factory. Coordination of questions connected with Hungary's participation in reconstructing four more sewing factories and also in building a bakery and two completely prefabricated mechanized storehouses, is nearing completion.

To accelerate production and technical cooperation, the Intergovernmental Commission approved their countries competent bodies' proposals on 140 important themes in science and technology and also on wider international specialization and cooperation in production. Relevant Soviet and Hungarian ministries and departments will be jointly

working on these themes in the next five-year period. In the joint activity of ministries and departments an important place is devoted to preparation of agreements on cooperation in micro-electronics, robotics, consumer goods production, and the agro-industrial complex, to broader combined efforts in making turbine and boiler equipment, farm machinery for vegetable-growing and pesticide application, to the design of a tunnelling combine for the coal industry, marine floating cranes (cargo-lifting capacity 150 tons), etc.

Analysis shows that since the meeting of the heads of government of the USSR and Hungary mutual deliveries of goods have grown approximately by 2,300 million rubles above the level envisaged by the Trade Agreement for 1981-1984. On the whole their trade over the 1981-1985 period will increase nearly 70 per cent over that in the previous five-year period.

Soviet-Hungarian cooperation is characterized by important achievements. The volume of specialized product mutual deliveries is growing each year. It is expected to reach about 10,400 million rubles during the 1981-1985 period, approximately double the figure obtained in the previous five-year plan period. Now the share of these products in the total trade turnover runs out at about 34.5 per cent, including engineering products—68.7 per cent.

For the first three years of the current five-year plan period the two countries have already jointly developed 17 new types of machines, various equipment and devices and four new technological processes. These devel-

opments include: equipment for controlling gas-supply systems which was installed in the Bukhara-Urals gas pipeline; trial samples of copper skelp continuous-casting moulds, which Hungary is testing, a block installation for controlling the consumption of a gas-lift working agent, which has already passed the required examination and will be delivered to the USSR, etc.

At the meeting of the Chairmen of the Commission national parts the progress made in implementing the 1984 Trade Protocol was considered. It was pointed out that the sides' mutual commitments were mainly fulfilled. At the same time the Commission drew the attention of Soviet and Hungarian foreign trade bodies to delays experienced in goods deliveries

during the first six months of 1984. Both countries' Foreign Trade Ministries were instructed to correct these drawbacks and quicken the conclusion of contracts for mutual deliveries of goods in 1985.

On completion of negotiations the sides signed an agreement and contracts on cooperation between the USSR and Hungary in reconstructing the Likino bus factory. Hungary will be responsible for the technological design of the reconstruction and supply equipment.

The Commission adopted decisions on matters connected with the organization in Moscow in 1985 of an exhibition dedicated to the 40th anniversary of Hungary's liberation in World War II, and also on some other questions of Soviet-Hungarian cooperation

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CEMA/EASTERN EUROPE

MECHANICS OF CEMA INTERBRANCH, ENTERPRISE COOPERATION, PRICES

Moscow PLANOVYE KHOZYAYSTVO in Russian No 9, Sep 84 pp 113-120

[Article by V. Grinev, doctor of economic sciences, under the rubric "Socialist Economic Integration": "The Development of the Direct Relations and Intrasectorial Economic Cooperation of the USSR with the CEMA Countries"]

[Text] It was noted at the 26th CPSU Congress that the CPSU and the other fraternal parties are pursuing a course to transform the two forthcoming five-year plans into a period of intensive production and scientific-technical cooperation for the socialist countries. Questions of the further development of direct relations between ministries, associations, and enterprises participating in cooperation have been put on the agenda.¹ The Statement of the Basic Directions for the Further Development and Intensification of the Economic and Scientific-Technical Collaboration of the CEMA Countries, adopted at the Summit Economic Conference of the CEMA Countries which took place in Moscow on 10-12 June of this year, declares "the extensive development of production cooperation and the establishment of direct relations between association, enterprises, and organizations" to be an important direction for the improvement of the economic mechanism of collaboration and for an increase in its efficiency. "For this purpose the CEMA countries will carry out measures to grant the necessary powers to them and to establish the appropriate conditions for collaboration"²

A certain re-evaluation of the role and significance of individual forms of production and scientific-technical collaboration is taking place under the conditions of the accelerated transition of the CEMA countries to a predominantly intensive path of development. In many respects the intensification of socialist economic integration depends now on the rates and scales of the development of cooperation in the community (sodrughestvo) and on the establishment of stable, technologically determined direct relations among the associations, enterprises, and organizations of the CEMA countries. At the same time cooperation as a form of combining forces is not an end in itself but a means of raising the qualitative indicators of production, making it possible to gain time and to raise the productivity of social labor. A gratuitous social productive force comes into being as a result of the cooperation of labor.³ Due to the higher degree of collectivization of production, its magnitude under socialism should objectively be greater than under capitalism.

The policy of cooperation, as an important means of raising the efficiency of social production, is conditioned by the greater economic benefit of its development in comparison with the organization of the process of producing output from start to finish by the efforts of an individual country alone. Presently the scales of production, the cost of scientific and planning-design work, and the sphere of their application are so great that an individual country, even one having a powerful scientific and production potential, is unable to hold leading positions in all directions of the development of science and technology with equal success.

For the purpose of giving the participants an economic interest in its intensification, distribution of the effect of cooperation among them begins with the selection by the parties of the priority directions of collaboration whose realization on the basis of cooperation will give the largest gains in time and expenditures. At the same time the distribution of the effect among them is determined in many respects by the agreed-upon system of foreign trade price formation for the output subject to cooperation. The state distributes the effect obtained as a result of international collaboration among the co-performers within the national frameworks. The success of cooperation depends on how complete the national system of management of cooperation is and how it is oriented to the priority development of collaboration with the CEMA countries.

On 9 July 1981 the USSR Council of Ministers adopted the decree "On the Further Improvement of the Collaboration of USSR Ministries and Departments, Associations, Enterprises, and Organizations with the Corresponding Bodies, Enterprises, and Organizations of Other CEMA Countries in the Fields of Science, Technology, and International Production Specialization and Cooperation." It outlined the organizational and legal conditions for work on the development of production and scientific-technical cooperation on the basis of direct contract and economic ties.

The responsibility for carrying out the coordination of a sector's development and the comprehensive development of economically efficient specialization, production cooperation and scientific-technical sectoral collaboration with the other CEMA countries rests on the sectorial ministry. It develops this collaboration in coordination with the plans for the economic and social development of the USSR, proceeding from the Comprehensive Program for Socialist Economic Integration, long-term special purpose cooperation programs, bilateral long-term programs for production specialization and cooperation, and coordinated plans for multilateral integration measures. For the purpose of fulfilling these commitments the sectoral ministries have been given the right to conduct negotiations and to conclude, jointly with the foreign trade departments (the USSR Ministry of Foreign Trade or the USSR State Committee for Foreign Economic Relations), international agreements of an interdepartmental character concerning questions of a sector's development, and of production specialization and cooperation with the corresponding bodies of the CEMA countries on a bilateral and multilateral basis.

The carrying out of negotiations and concluding of international agreements on scientific-technical collaboration on intersectorial integrated problems and problems of long-term significance has been assigned to the USSR State Committee for Science and Technology and with its consent is permitted to the corresponding USSR sectorial ministries and departments. If the problems and subjects concern questions of a sectorial nature, then the USSR sectorial ministries and departments conclude the international contracts on scientific-technical collaboration independently, but only after the consent of the GKNT [the USSR State Committee for Science and Technology].

Economic (civil-law) agreements for collaboration are concluded by the associations, enterprises, and organizations, with the permission of the corresponding USSR sectorial ministries and departments, for the purpose of fulfilling the Soviet side's commitments resulting from the international agreements of the USSR with the CEMA countries as well as of developing intrasectorial cooperation. The decisions to sign such agreements are made by the ministries with due regard for the economic efficiency of the collaboration being planned. On questions of specialization and cooperation these agreements are signed jointly with the corresponding foreign trade associations concluding contracts for delivery of output.

The presence of agreed-upon foreign trade prices (level of prices for groups of items) for all items put into production and planned for deliveries is an obligatory condition for the concluding of interdepartmental and economic agreements. For new output the Soviet side's commitments go into effect only after agreement on the volumes of deliveries and on the foreign trade prices. The above-mentioned decree authorized the USSR sectorial ministries and departments to independently adopt decisions for concluding economic agreements for the output planned and distributed by them on a balanced currency value basis (that is, with export and import balanced in foreign trade prices) including mutual deliveries in excess of the volumes envisaged in long-term trade agreements and annual community turnover protocols. Thus, even operating within the framework of the export and import limits established by the USSR Gosplan for each sectorial ministry and reported to them not later than two years before the beginning of the following five-year plan, the ministries have an insignificant field for the adoption of independent decisions. It is limited by the output planned and distributed by the ministry and by the requirement of a balanced exchange. The two conditions occur together quite rarely.

A special section is being worked out in the plans for a sector's development by the USSR ministries and departments to insure fulfillment of the Soviet side's commitments resulting from interdepartmental and economic agreements. Based on it, targets are established for subordinate associations, organizations, and enterprises along with the allocation of the material and financial resources necessary for their fulfillment.

On the basis of economic agreements, as envisaged by the above-mentioned decree, associations, enterprises, and organizations can, with the ministry's permission, establish direct production and scientific-technical relations within whose framework they enter into contacts with organizations from other

CEMA COUNTRIES and conduct correspondence with them on scientific-technical problems not associated with the commercial conditions of the performance of the work.

Direct production relations are brought about for the purpose of the realization of the targets of the state plans, the practical solution of problems connected with the fulfilling of interdepartmental and economic agreements and the exchange of work experience on the organization and improvement of production as well as of the further expansion of collaboration in the field of production cooperation, the more efficient use of capacities, an increase in the above-plan production of output and the involving in the exchange of the production-technical purpose output which is freed. Primarily such relations are established between cooperating enterprises. And this is understandable since the organization of cooperation, the ensuring of an uninterrupted production process and the continuous improvement of the item itself and its production technology require contact between the performers and operational efficiency in the exchange of samples of items, riggings, tools, assemblies, and parts and in the rendering of design and technological services.

Undoubtedly, the concept "direct relations" includes more than just relationships for cooperation in production. The collaboration experience of 13 GDR combines and 19 USSR enterprises, which have conducted for 21 items produced in both countries a comparison of the norms for expenditures of raw and processed materials and energy, is interesting. This has made it possible to adopt specific measures in both countries for the improvement of the technology and design of these items. Presently this work is being expanded.

The range of problems being solved with the use of direct immediate relations is great.⁴ For example, as a result of direct collaboration with the Fritz Heckert Combine (GDR), German experience in the organization of sections of machine tools with numerical control, in the development of designs of small threaded guides and in the technology of manufacturing antifriction guides as well as advanced techniques and materials used in the GDR for painting machine tools were introduced at the Ivanovo Machine Tool Building Association. The enterprises of the Khimvolokno Association in Kursk, Chernigov, Mogilev, and Kiev and the Schwarz Chemical Fibers Combine (GDR) are organizing joint brigades of specialists that are conducting an analysis of the technical, economic, and qualitative indicators of existing installations for the production of textile and cord threads and so forth; they are working out proposals for increasing the capacities of the plants and raising labor productivity and output quality, are coordinating measures and means for introducing jointly prepared recommendations for increasing production efficiency at the USSR and the GDR enterprises, and are developing new models of output. The economic effect of the introduction of measures and recommendations based on the results of joint work amounted to 1 million rubles in the USSR in 1976-1980 alone.

The Kalush Khlorovinil Association and the Tisza Chemical Combine (Hungary), which are connected by ethylene pipelines, regularly agree upon the monthly

volumes of ethylene deliveries, the schedules for shutting down equipment for repair, and other questions of production collaboration. The plant imeni Yanvarskogo Vosstaniya (Odessa) and the Polish Bumar Production Association have formed two joint planning-design buros (in the USSR and Poland), which have worked out unique designs for truck cranes with a lifting capacity of 25 and 40 tons. Their production has been organized on a cooperation basis. The exchange of experience and technical documentation and, on a balanced basis, the exchange of assemblies for the model 2M55 radial drill has been carried out between the Odessa Radial Drill Plant and the Machine Building Plant in Focani (Romania) for a number of years.

The collaboration of the USSR with the CEMA countries knows several examples of large-scale cooperation: the RYad computer system and the production of nuclear power plant equipment, cars, trucks, buses, agricultural machinery, and road building machines. But nevertheless the level of development of cooperation between the CEMA countries and of direct relations among associations, enterprises and organizations is still low in comparison with their scientific and production potential. The volumes of mutual deliveries of assemblies, parts, and components among these countries are insignificant and the number of enterprises in the Soviet Union which have established direct production relations with partners from the fraternal countries does not exceed a few hundred. In many respects this is explained by the lack of a solution for a number of economic questions essentially not touched upon by the 9 July 1981 decree.

Immediately before the Summit Economic Conference of the CEMA Countries the Politburo of the CPSU Central Committee approved measures worked out by the USSR Council of Ministers for the establishment of the necessary conditions for the development of international production and scientific-production intrasectorial cooperation and for the improvement of direct relations between the ministries and enterprises of the Soviet Union and other fraternal countries.⁵ The Fundamental Principles on the Procedure of Conducting Direct Production and Scientific-Technical Relations Under International Intrasectorial Cooperation Between the Ministries, Departments, Associations, Enterprises, and Organizations of the USSR and the CEMA Countries were ratified by the USSR Council of Minister's 7 June 1984 decree on this question. The tasks and rights of these organizations when conducting direct relations and cooperation and the procedure for the planning of cooperation and of adopting decisions about the establishment of direct relations, including questions of monitoring the fulfillment of adopted contract obligations are defined in this document. The new decree, expanding and supplementing the 9 July 1981 decree, is directed at priority development of international production and scientific-technical intrasectorial cooperation and direct relations between ministries, associations, enterprises, and organizations.

The term intrasectorial cooperation, we believe, should be understood as that form of the division of labor among economic units within the framework of individual sectors and production units which presupposes their close interaction as regards production and exchange on the basis of long-term and uninterrupted technological interdependence. Production intrasectorial

cooperation can appear in the form of an association of enterprises producing assemblies and parts with an assembly plant. Collaboration in the production of the family of VAZ passenger cars can serve as an example. The exchange of semimanufactures between two or more enterprises in different countries during the assembly of a single machine or its modified version is a more complex form of cooperation. Collaboration between Hungary and the USSR in the production of buses is carried out in this way. Hungary supplies the Soviet Union with the rear axles in exchange for the front ones. The comprehensive form of cooperation under which is understood a union of the scientific, design, and production activity of partners from various countries is also examined in the literature.⁷ This form can also include the joint sale of the finished output. Unlike production cooperation, cooperation in science presupposes the receiving of an end result that belongs to all the participants.

The 7 June 1984 decree designated associations, enterprises, and organizations as the basic links carrying out direct production and scientific-technical relations with the enterprises and organizations of the other CEMA countries for the purpose of establishing steady, long-term, and mutually beneficial cooperative production. The leaders of the enterprises, associations, and organizations that have obtained the right to carry out such relations with the permission of a higher ranking ministry, are personally responsible for their economic efficiency for the Soviet Union and for international intrasectorial cooperation and for the timely fulfillment of contract commitments.

In comparison with the 9 July 1981 decree the list of the tasks being resolved with the help of direct relations and intrasectorial cooperation has been supplemented by the rendering of mutual aid in the setting up of equipment and introduction of the latest technologies, and in the correcting of troubles identified during the process of operation, by the organization of joint tests of new and improved equipment; and by the introduction of common technical requirements for jointly produced output. The carrying-out of joint scientific-research and planning-design work on problems and subjects associated with the ensuring of intrasectorial cooperation and the improving of its organization has also been designated an important task.

For the fulfillment of the tasks entrusted to them and the practical solution of problems developing in the course of the implementation of direct relations, USSR associations, enterprises, and organizations can, with the ministry's (department's) permission, form permanently or temporarily active conferences of authorized representatives of the parties, interplant coordination councils, councils of chief designers and joint collectives (design and technological buros and scientific-research groups and laboratories); carry out an exchange of brigades; and send groups and individual workers to the appropriate country on work trips.

As an example we can cite the interplant coordination council formed equally from the leaders of the machine building production association imeni M.V. Frunze in Sumh (USSR) and the chemical machine building economic combine in Khaskovo (Bulgaria) as well as from representatives of the Bulgarian and

USSR foreign trade organizations. The basic task of this council is to assist the development of cooperation between these enterprises. For the purpose of ensuring operational contact between the appropriate services of the Soviet and Bulgarian enterprises with the sectorial ministries and foreign trade organizations of both countries on questions of fulfilling agreed-upon plans for collaboration, representatives from the Soviet side of the inter-plant coordination council--the deputy general director of the association in Sumy and specialists, whose number is established by agreement of the sides--are located in Khaskovo.

The right to independently choose the most pressing and promising for them directions and subjects of production collaboration (for the development of cooperation, primarily for new kinds of output) is granted to the associations and enterprises within the framework of these organizational forms. With the ministry's permission they carry out a regular exchange of information on the introduction of the latest scientific-technical achievements concerning the output subject to cooperation on and on the operational features, qualitative indicators and reliability of mutually delivered assemblies and parts and carry out work on standardizing the output subject to cooperation.

USSR enterprises, associations, and organizations prepare proposals on the conducting of direct relations and about including the targets for cooperation which are necessary for them in the drafts of the sector's five-year and annual plans. These proposals can concern the output not only planned and distributed by the USSR ministries and departments, but also that whose production involves the centralized distribution of material resources. After the ministries examine the proposals, the enterprises, proceeding from the assignments and commitments which result from the economic agreements they have concluded, form five-year and annual plans for international intrasectorial cooperation and take the obligations assumed into consideration during the development of production programs.

The 7 June 1984 decree places on the USSR ministries and departments the responsibility for the organization and development of direct relations and international intrasectorial cooperation by subordinate enterprises, associations, and organizations and for the creation of economic and other conditions ensuring their interest in the development of such forms of collaboration. The USSR ministries and departments themselves can carry out direct relations on the basis of international agreements of an inter-departmental character through the working group of intergovernmental commissions on economic and scientific-technical collaboration with the permission of the representatives of the Soviet sides of these commissions. Proposals for establishing such relations are prepared by the appropriate sectorial ministries.

Direct relations on a ministerial level, as a rule, are direct contacts of the personnel of these organizations. They are established for the solution primarily of the tasks of intensifying integration relations and coordinating the development of sectors and large-scale production facilities for the long-range period. This makes it possible to determine the directions for collaboration in advance and to consider mutual requirements for output

when working out corresponding plans, to reduce unjustified parallel production, and to economize on material and labor resources. The ministries have the right to negotiate about the development of the production of output necessary for their country's national economy about an increase of its export, and about the consistent implementation of measures directed at replacing unjustified imports from capitalist countries. Utilizing direct contacts, they can exchange advanced experiences in organizing production, increasing labor productivity and reducing expenditures, and they can adopt timely measures to ensure the output and mutual delivery of production conforming to the best world models in terms of technical level and quality. Their responsibilities also include unification and standardization of mutually delivered output, the improvement of its technical maintenance, and the complete supplying of spare parts.

For the purpose of fulfilling these tasks the USSR ministries and departments, proceeding from the approximate volumes of mutual deliveries of the output subject to cooperation as communicated by USSR Gosplan, work out a new subsection--the plan for international intrasectorial cooperation--as part of a special section of the five-year and annual plans for the sector's development (this section was introduced by the Council of Minister's 9 July 1981 decree). This subsection includes the targets, with the allocation of the corresponding material and financial resources, for ensuring the fulfillment of the Soviet side's commitments for the production for deliveries for export of output subject to cooperation for the entire list of output produced by the ministry's enterprises as well as for the import of output subject to cooperation from the CEMA countries. Other commitments which arise in the carrying-out of international intrasectorial cooperation and direct relations should also be reflected in it.

The rights of the ministries have been expanded in comparison with the Council of Minister's 9 July 1981 decree. Now, within the limits of the preliminary export and import volumes of the output subject to cooperation as communicated by USSR Gosplan, they can independently decide questions of the concluding of contracts even if the output is not distributed by the ministry and the volumes are not balanced. It is true that the proposals for mutual deliveries of output whose production involves the centralized allocation of material resources for its manufacture or centralized distribution of the finished output should be coordinated beforehand with USSR Gosplan and USSR Gossnab (State Committee for Material and Technical Supply). The targets for mutual deliveries of output subject to cooperation included by the ministries in the plan's special subsection (the plan for international intrasectorial cooperation) are communicated to the subordinate enterprises and provided for on the basis of their proposals by USSR Gosplan when working out the drafts for the State Plans for the Economic and Social Development of the USSR as well as in the plans for the export and import of goods.

Independent planning of cooperation was not done until 1984. The possibility for its realization originated in connection with the fact that USSR Gosplan, in accordance with the USSR Council of Minister's 9 July 1981 decree, when drafting for USSR ministries and departments the indicators of the volumes

of the export and import of a sector's output between the USSR and the other CEMA countries for the next five-year plan, was instructed to establish for each USSR sectorial ministry and department, based on its proposals, approximate export and import volumes of output subject to cooperation in value terms, and when necessary, in physical terms. As yet there is no experience in establishing such approximate volumes.

Presently USSR Gosplan establishes general indicators in the form of amounts of possible purchases for import and deliveries for export. They determine these amounts in foreign trade prices, proceeding from balance considerations for each CEMA country. But the USSR Gosplan and the ministries consider these sums especially tentative and often review and refine them. It seems that the form and content of these approximate volumes can be improved. In particular, there is apparently no need to establish any kind of export restrictions (limits). One should consider the targets for it as the minimum allowable.

The export of machine building output is shaped by a limited group of sectorial ministries, while all sectors of the national economy act as consumers of imported machines and equipment. As a rule, a sector producing output for export, imports little for its own needs. USSR Gosplan and USSR Gosnab determine the overwhelming share of the volume of imports on the basis of consumer requests. Therefore, USSR Gosplan could establish the limits in the form of the excess of imports over exports permitted for a given sectorial ministry or in the form of a fixed percentage of the value of its exports. In this case the import opportunities for a sectorial ministry would be determined by its efforts to develop export. With this approach a sectorial ministry would have the opportunity to develop the foreign trade exchange of its own output on a basis balanced in terms of currency value, being guided only by resource limitations. The export-import ratio would be regulated from the standpoint of balance considerations.

In addition to the establishment for subordinate enterprises, associations, and organizations of economic conditions which arouse their interest in the development of international cooperation through the utilization of direct relations, the USSR sectorial ministries and departments should provide them with information on the opportunities of corresponding enterprises and organizations of the other CEMA countries for the development of international intrasectorial cooperation. They are also obligated to adopt measures for the quickest realization and introduction into production of joint developments generated in the process of carrying out direct relations and to circulate throughout the sector advanced foreign production experience and scientific achievements obtained as a result of the carrying-out of joint work.

The USSR Council of Minister's 7 June 1984 decree envisages measures for the economic stimulation of industrial and foreign trade associations, enterprises, and organizations and USSR sectorial ministries and departments for developing international intrasectorial cooperation and accelerating the introduction of the results of joint scientific-technical research into the national economy. It is planned to accomplish the providing of incentives by

the establishing of special funds for the development of international intrasectorial cooperation at enterprises and in associations and organizations of industry as well as by means of additional deductions to the material incentive funds established in accordance with existing legislation. It is planned in the USSR ministries and departments to form centralized cooperation funds by means of deductions from subordinate enterprises.

Deductions to the funds for the development of international intrasectorial cooperation and to the material incentive funds can be made only in the event of a positive economic effect achieved as a result of cooperation. The source of the deductions is the increase in profit as a result of an increase in the efficiency and the expansion of production as well as of an increase in the export of output. It has been established that these deductions are made independently of the incentives already being paid to the industrial enterprises for timely and high-grade delivery of output for export. As yet there is no experience in forming these funds.

The enterprises, associations, and organizations have the right to spend the assets from the fund for the development of international intrasectorial cooperation, to purchase equipment and materials in the fraternal countries for the development of production subject to cooperation, and to pay the expenditures associated with the carrying-out of direct relations, with the work trips of Soviet officials, to the CEMA countries and with the receiving of specialists from these countries. It is permitted to spend 10-15 percent of the fund's assets for this purpose. When there is a shortage of them, expenditures associated with the carrying-out of direct relations are covered by other assets of the enterprises, associations, organizations, and USSR ministries and departments.

The payment of bonuses to industrial and foreign trade workers for participating in work associated with the development of international intrasectorial cooperation, including the payment by it for tourist passes, vacations, and medical treatment in the CEMA countries is authorized to be made from material incentive funds.

In accordance with the USSR Council of Minister's 9 July 1981 decree, the ministries justify their proposals for concluding international agreements by calculations of its effect. They consider these calculations when they adopt decisions for the concluding of economic agreements by enterprises and associations. We believe that the calculations of the economic efficiency of international agreements for production specialization and cooperation should be carried out according to the Procedure for Determining the Economic Efficiency of Foreign Economic Relations approved by USSR Gosplan on 25 February 1980. As for the calculations of the economic efficiency of collaboration planned on the basis of international intrasectorial cooperation and direct relations, it would be incorrect to use this Procedure without adjustments.

The question is one of determining the over-all effect of cooperation. In the formula for calculating effect the components should be determined on the basis of existing wholesale prices and not on the basis of the

accounting indicators recommended by the Procedure--the calculated expenditures which have no relation to the industrial enterprise's real cost accounting. This especially concerns the recommendations for determining the effect for the enterprise as the difference between calculated expenditures and wholesale prices. Cooperation is especially specific and directed. Enterprises deal with real wholesale prices. They plan and make reports on their basis. The amounts of incentives for the development of cooperation will depend on these prices, and not on calculated expenditures. The effect for the enterprise should be determined according to the influence of cooperation on the profit remaining at its disposal.

Moreover, only that export and import which directly concern a particular enterprise should be taken into account in the formula for calculating the overall effect itself. On the basis of their own lists of output, USSR Gosplan and the USSR Gosnab should bear the responsibility for the efficiency of imports included in international agreements for the purpose of satisfying the requirements of other sectors of the national economy.

Taking what has been said into account, amendments directed, in particular, at taking into account the influence of international cooperation relations on the financial indicators of the cost accounting activity of industrial enterprises should be introduced into USSR Gosplan's 1980 Procedure.

As is recommended by the decree, it is easier to carry out the calculations for the different variations of planned collaboration themselves with the help of USSR Gosplan's debugged and well-running automated system (ASOP-Vneshtorg). In this case only reliable raw data are needed from the ministries. By examining the variations for the organization of production subject to cooperation it is always possible to select the most efficient.

The question of the prices of assemblies and parts imported on the basis of cooperation is most important for industrial enterprises. The fact is that in quite a number of cases the foreign trade prices for these items are higher (and at times significantly) than the wholesale prices for the very same product in the Soviet Union. The receipt of assemblies and parts by an enterprise at foreign trade prices would result in an increase in prime cost, in the necessity for continuous (following the prices) revision of plans, and ultimately in a lack of interest in international cooperation.

In the European CEMA countries this question has been resolved on the basis of the so-called "uniform financial result" where the enterprise settles accounts for output produced for export and imported for their own needs either directly with the foreign contractor or with the foreign trade association essentially at foreign trade prices. This involves in particular substantial expansion of the rights and obligations of industrial enterprises in the carrying-out of foreign economic collaboration. In the Soviet Union industrial enterprises transfer output designated for export to foreign trade associations at domestic wholesale prices with a surcharge whose purpose is to cover the additional expenditures of the manufacture caused by the satisfying of the foreign consumer's requirements. An analogous procedure has been adopted for imports.

The USSR Council of Minister's 7 June 1984 decree notes that in order to establish favorable conditions for the development of production being carried out on the basis of international intrasectorial cooperation, foreign trade associations are obligated to release to the associations, enterprises, and organizations of USSR industry assemblies, parts, components, and other items, imported on the basis of cooperation, which are necessary for the production of domestic output (first of all output centrally distributed or other output important to the USSR national economy) at wholesale prices established for analogous domestically-produced output. Of course, with such a decision, lack of interest in the development of cooperation on the part of the foreign trade association may arise. We believe the answer is to concentrate export-import transactions based on collaboration in cooperation in a single foreign trade association; then the differences between wholesale and foreign trade prices in export and import should be mutually balanced.

Beside financial and accounting questions, others which it is necessary to coordinate with a large number of different foreign trade associations (a different list and questions of licenses and scientific-technical cooperation) develop when setting up collaboration in cooperation. To alleviate the situation of sectorial ministries, the USSR Council of Minister's 7 July 1984 decree instructed the Ministry of Foreign Trade to ensure the carrying out of all foreign trade transactions associated with international intrasectorial cooperation including the exchange of item samples, individual assemblies, parts, instruments, riggings, tools, materials, and other output, and the granting of services through one or two intermediary all-union trade associations specializing in the carrying-out of the indicated transactions.

Cooperation requires operational efficiency in the solution of questions of a production character. For this purpose it is planned to expand the practice of concluding so-called annual global contracts. Their essence lies in the fact that, on the basis of proposals from the USSR ministries and departments, the foreign trade associations coordinate with the foreign partners the annual amounts of funds on a balanced in terms of currency value basis, within whose framework one is permitted to transfer item samples, individual assemblies, and parts and to perform urgent design and technological services. The special feature of such contracts is that the exchange of services and items under them is carried out without waiting for agreement on commercial conditions (including prices) and with the execution of mutual settlements at the end of the year.

In these instances the annual volumes of mutual deliveries are stated in bilateral interdepartmental agreements and are distributed by the USSR ministries and departments to the subordinate enterprises, associations, and organizations which can exchange output and services within the limits of the amounts reported to them, formalizing these deliveries through intermediary foreign trade associations.

The provisions of the USSR Council of Minister's 9 July 1981 and 7 June 1984 decrees stated above are extended to the USSR Academy of Sciences and its bodies, and with its consent, to the academies of sciences of union

republics. They are valid also for the republic ministries and departments and the associations, enterprises, and organizations subordinate to them, which can carry out international intrasectorial cooperation and direct relations with the agencies, enterprises, and organizations of other CEMA countries with the permission, in each individual case, of the union republic's Council of Ministers and upon agreement with the USSR Gosplan (GKNT), the USSR Ministry of Foreign Trade and the USSR Ministry of Finance.

The measures for establishing conditions for the development of international production and scientific-technical cooperation as well as of direct relations which have been examined, undoubtedly, do not resolve all the questions concerning this form of collaboration. At the same time the implementation of the decisions already adopted depends in decisive measure on to what extent they will be grasped by the industrial and foreign trade workers responsible for the development of USSR economic collaboration with the CEMA countries. Their initiative and enterprise can substantially help the development of cooperation—one of the basic ways to further intensify socialist economic integration at this stage.

FOOTNOTES

1. "Materialy XXVI sъезда КПСС" [Materials on the 26th CPSU Congress], Moscow Politizdat, 1981, pp 7-8.
2. "Ekonomiceskoye soveschaniye stran-chlenov SEV na vysshem urovne" [the Summit Economic Conference of the CEMA Countries], Moscow, Politizdat, 1984, p 21.
3. See K. Marx and F. Engels, "Sochineniye" [Works], Vol 47, p 291.
4. Questions of direct relations are examined in more detail in the following works:
O. Bakovetskiy and V. Gavrilov, "The Expansion of Direct Relations between Economic Units of the USSR and the CEMA Countries," PLANOVYE KHOZYAYSTVO, No 10, 1983, pp 98-104.
O. Bakovetskiy and V. Grinev, "On Direct Production Relations," VOPROSY EKONOMIKI, No 4, 1982, pp 113-121.
M. Bogatska and S. Sil'verstov, "The Experience of the Development of Direct Relations," EKONOMICESKOYE SOTRUDNICHESTVO STRAN-CHLENOV SEV, No 5, 1983, pp 19-22.
M. Braginskiy, "CEMA: Economic and Scientific-Technical Collaboration and Direct Relations," KHOZYAYSTVO I PRAVO, No 8, 1983, pp 76-79.
V. Gavrilov, "Problemy sotrudничества стран SEV на отраслевом уровне" [Problems of the Collaboration of the CEMA Countries on a Sectorial Level], VOPROSY EKONOMIKI, No 11, 1983, pp 93-100.
V. Shastitko, "Production Cooperation on the Enterprise Level," VOPROSY EKONOMIKI, No 1, 1984, pp 135-142.
Yu. Shiyayev and N. Bautina, "Questions of Utilizing Commodity-Monetary Levers in the Implementation of International Measures, PLANOVYE KHOZYAYSTVO, No 3, 1984, and others.

5. PRAVDA, 1984, June 8.
6. A broader definition of cooperation is given by K. Marx who interpreted it as a form of labor "under which many persons systematically work together and in cooperation with each other in a particular production process or in various production processes that are associated with each other..." K. Marx and F. Engels, "Sochineniye", Vol 23, p 337.
7. Yu. Shirayev, Mezhdunaronyye proizvodstvennyye sistemy [International Production Systems], Moscow, Vysshaya Shkola, 1981, p 29.

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CEMA-EASTERN EUROPE

ECONOMIC INTEGRATION THROUGH YEAR 2000 DISCUSSED

Moscow NEW TIMES in English No 3, Jan 85 pp 4-6

[Article by Yuri Shirayev, corresponding member, USSR Academy of Sciences]

[Excerpts] The CMEA countries' economic summit in Moscow last June mapped out ways of deepening their economic co-operation over the entire period to the year 2000. It was pointed out at the summit that these countries have considerable reserves for further specialization and coproduction which make for more efficient use of their scientific and technological potential. The decisions adopted at the summit are already being translated into life, as was evidenced by the results of the CMEA session held in Havana in the autumn.

The CMEA countries are rightly proud of the impressive results of their socio-economic development. A continuous rise in production is manifested by a steady growth of the gross national income.

However, in assessing the prospects of further economic growth it would be a mistake to simplify things or to underrate the difficulties involved in achieving our economic objectives. There is no such thing as a problem-free economy if only because every economy is a dynamically growing organism which keeps generating new problems. They cannot be solved at one go. This is especially true of the problems connected with the radical retooling of many industries. The summit conference participants were unanimous in the view that measures aimed at speeding scientific and technological progress should constitute the core of economic strategy in the period ending in 2000.

This requires a thoroughly thought-out conception of further economic development.

In the coming 15-20 years, special emphasis will be laid on scientific and technological progress in the following five areas: electronization of the national economy; the development of flexible automated production cycles; atomic energy generation; the creation of new materials and new production processes; biotechnology which has triggered a revolution in many industries.

It goes without saying that progress in each of these areas did not begin from scratch. In 1983, total output of metalcutting machine-tools in the U.S.S.R. constituted 190,000. In 1988-90, we are to make over 100,000 industrial robots, 110,000 numerically controlled machine-tools, over 4,000 automatic and semi-automatic production lines, about 2,000 flexible automated production systems (all the way to fully automated plants), nearly 3,000 automated computer-aided design systems. In other socialist countries, plans are afoot for a multifold increase in the output of new-generation technology. The introduction of new manufacturing systems and processes contributes not only to the advancement of one or another industry, but to overall economic progress.

Breakthroughs in the above-mentioned five basic areas of technological progress lead to a transformation of the CMEA countries' entire

complex of production facilities, to a revolution in science and technology unprecedented for its depth and scope.

Plants of the Future

Take the electronization of the national economy, for instance. New-generation equipment necessary for the plants of the future is already in the making. With all their production processes comprehensively mechanized, these plants will bring about a steep upsurge in labour productivity, a dramatic improvement in output quality, and a marked reduction in the production apparatus' "pressure" on workforce and natural resources.

The plants of the future will require functionally compatible computers ranging from large to mini, as well as reliable unified peripherals essential to the immediate participation by the computers in designing and manufacturing processes. They will also need unified software which costs more and more to work out, and high-capacity communication networks making it possible to set up multi-access computer systems. There arises a multitude of problems involved in getting the production of numerous accessory instruments, devices and new materials under way. Last but not least, the plants of the future will need well-trained personnel capable of making the most of new equipment.

In short, the CMEA countries are facing a "pyramid" of concrete scientific, technical and production tasks on the fulfilment of which their further advance depends. Any attempt to deal with them separately, rather than by joint efforts, would be a waste of time and money. Had they not pooled their efforts in developing the RYAD computers, for instance, the CMEA countries would have been compelled to import this costly equipment in ever greater quantities, and to grapple with the concomitant trade and political problems.

Close co-operation among the CMEA countries in a traditional sphere like the strengthening of

their fuel and raw material base is of extraordinary importance.

On the whole, the CMEA countries are self-sufficient in fuel, energy and raw materials. Over the past few years they have built, by joint efforts, trunk pipelines and electric power transmission lines, and carried out major joint projects. These include the Druzhba (Friendship) oil pipeline and the Soyuz gas pipeline, unparalleled for capacity and length, as well as the CMEA countries' integrated power systems. The atomic power stations now in operation total about 26 million kW in output capacity. By the year 1990, this figure is to reach 100 million kW. The long-term comprehensive measures decided upon by the Havana session will contribute towards the further strengthening of the socialist community's fuel and energy base.

All this of course testifies to the progress made in the sphere of energy generation. It should be borne in mind, however, that the U.S.S.R. alone consumes almost a 1.5 billion rubles' worth of energy and raw materials a day. At the same time, fuel-saving measures as a rule involve a half or even a third of the expenses required to increase the extraction of fuel and to deliver it to consumer.

Obviously, the fuel and raw material base should now be strengthened not through increasing the extraction of primary resources, but through optimizing their utilization, and through getting the maximum energy out of each ton of the fuel used. This is not only a production problem. It is also the problem of overcoming, in the next few years, the negative features of some CMEA countries' production structures making inadequate use of their raw material resources or depending too heavily on the easily accessible imported primary resources. This is

a difficult problem, but there is no ignoring it, all the more so since the need to restructure the power industry is nothing new. It has long been known that intra-CMEA division of labour in the sphere of energy production boils down so far to the supply of fuel (Soviet, for the most part) in exchange for manufactured goods. As the U.S.S.R.'s fuel and raw material base is shifting eastwards, it will soon become practically impossible to maintain in this way the growth of the traditional manufacturing industries in the European part of the U.S.S.R. and in the neighbouring European socialist countries.

Multilateral Interaction

It has become obvious by now that the rising costs of raw materials and fuel is a problem that faces the entire community. New (or alternative) resources must be drawn into use and production restructured at minimum cost—which is possible only given the co-ordinated structural policy of the CMEA countries.

In other words, the solution of every major technological and economic problem calls for a collective programme which not only sets the ultimate and intermediate goals, but provides for radical changes in the forms of management, organizational and legal fabric of co-operation. The introduction of new, more profound and more flexible forms of interaction is a complicated task, of course. It can be accomplished by stages, as the CMEA countries accumulate the necessary experience and analyze the results of economic experiments (including bilateral ones). The above applies to all the major branches of the economy.

Take mechanical engineering, for instance. This industry is growing faster than industrial production as a whole. In the period 1951-83, the

output of engineering products grew more than 36-fold. By 1983, the mechanical engineering and metal-working industries accounted for a third of the industrial output of most of the European CMEA countries. In this respect, European CMEA countries have come close to the level of the more developed capitalist countries. In the framework of the long-term purpose-oriented programmes of co-operation in mechanical engineering, the CMEA countries have signed nearly 50 agreements on the specialized and joint production of machines and equipment for the power, fuel and mining industries, agriculture, the light and food industries, transport, and also on the retooling of the mechanical engineering industry proper.

The mechanical engineering industry, which sets the technological standard of the national economy, can no longer be modernized in the customary way of building new plants and installing new machinery. Continued specialization would inevitably involve the construction of thousands of new factories and enormous material and financial outlays. A more rational way is to promote international co-production which makes it possible to keep updating the entire range of the items produced.

Such co-production should probably include as an important element the joint introduction of new manufacturing processes. In this case, a rational distribution of production programmes among the CMEA countries will speed up the intensification of production, especially if co-ordinated efforts in the main avenues of scientific and technological progress are backed by the industrial amalgamations, integrated works, concerns and factories operating in the CMEA countries, by the development of

international firms which help in the pooling of these countries' material and intellectual resources.

Synchronized Growth Rates

The fulfilment of the joint 15-year programme calls for qualitative changes in the system of the socialist community's internal and external ties and for the synchronization of individual countries' socio-economic progress. Such synchronization is essential to the promotion of the scientific and industrial revolution in the CMEA countries. The accelerated retooling of a number of industries and plants obviously presupposes a much more efficient use of the accumulation funds. This can be achieved only through smooth co-ordination of international investment policy, and on condition that all forms of co-operation are geared to optimum end results.

The current need for a sharp rise in the technical standard of the national economy, for the prompt introduction of research findings and new engineering ideas into production, and for the quantity manufacturing of new products places higher demands on foreign trade among socialist countries. The technological revolution has necessitated the

restructuring of the present complicated system of bilateral agreements and treaties which determine basically the terms and volume of intra-CMEA co-operation. This system worked in the past, but now it is clear that the forms of co-operation which at one time were adequate will hardly fill the bill in the future. An entirely new approach to international economic relations certainly means more than a mere increase in the number of multilateral and bilateral agreements solving "separately" the now common production, scientific and technological problems that face socialist countries.

To sum up the strategy of the international socialist labour division for the period ending in the year 2000 will call for the mutual dovetailing of economic and organizational measures both within individual countries and in the entire system of international economic co-operation. These measures will promote co-operation in the field of planning, stimulate the development of intra-CMEA trade, bring their national economic mechanisms closer together within rational limits, strengthen the organizational and legal groundwork of CMEA activities. As a result, co-operation among socialist countries will rise to a still higher level.

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CEMA/EASTERN EUROPE

CONSTRUCTION OF POWER ENGINEERING PROJECTS DETAILED

Moscow FOREIGN TRADE in English No 1, Jan 85 pp 26-30

/Article by Alexandr Postovalov, President of V/O Technopromexport/

/Text/

The Soviet Union has forged ahead in power engineering. By 1985 the total capacity of the USSR's electric power stations was over 300 million kW and the power output was about 1,500,000 million kWh.

Soviet power engineering takes the world's leading positions in unit capacities of electric power stations and major equipment (turbines, generators, boilers and transformers), as well as in steam parameters and electric power lines' voltages.

The unit capacity of the thermal power stations being built exceeds three million kW. Today 500,000 and 800,000 kW power units are now in series production. Our country's one-spindle turbines, 800,000 and 1,200,000 kW generators and 250,000 kW power-and-heat units are the largest in the world. At present power units operating at 240 kgf/cm² and 540/540°C steam parameters constitute more than one half of the installed capacity of condensation thermal power stations. This has reduced the specific fuel consumption by five to six per cent compared to power units operating at an initial pressure of 130 kgf/cm².

In the specific fuel consumption, the most important power engineering economic indicator, our country is ahead of almost all large industrial countries. This was achieved owing to the wide introduction of a combined method of electric power and heat production at thermo-electric plants.

Great stress is placed on using low-grade solid fuels in the USSR's power engineering, such as: peat, lignites, shales etc.

The scales and technical level of hydraulic power engineering and hydro-engineering construction put the USSR in advanced positions in world power engineering.

Electrical power engineering occupies a leading place in the USSR's economic and technical cooperation with foreign countries. The share of this sector constitutes approximately one-fourth of the Soviet Union's volume of technical assistance.

The All-Union Export-Import Association Technopromexport was set up in 1957 to render technical assistance to foreign countries in constructing complete power engineering projects. The Association undertakes all kinds of work connected with constructing thermal, gas turbines, diesel and hydraulic electric power stations, transformer substations and electric power lines in countries with most diverse climatic conditions.

Owing to the continuing annual progress of the Soviet Union's industry Technopromexport is able to fulfil foreign organizations' orders for rendering assistance in all complex of work in power engineering including research, prospecting and design, construction, delivery of complete production equipment, assembly, adjustment and commissioning of projects as well as transfer of experience and "know-how" in designing, constructing, operating and modernizing power engineering projects, sale of accompanying licences, delivery of spare parts and technical servicing of equipment supplied.

Under Technopromexport's contracts over 300 power engineering projects (total capacity 69 mln. kW) were and are being designed or constructed in more than fifty countries of Europe, Asia, Africa and Latin America and include thermal power stations (total capacity over 55 mln. kW) and hydro-electric power stations (nearly 14 mln. kW).

Leading Soviet design, research and specialized organizations undertake prospecting, design and construction work with the account of the latest advancements in constructing power projects in the Soviet Union and other countries.

Cooperation with the socialist countries occupies an important place in the USSR's foreign economic ties.

The development of the socialist countries' power engineering with the USSR's participation is aimed primarily at achieving a more effective utilization of local solid-fuel sources. The Soviet Union rendered and is rendering assistance to many socialist countries in constructing hy-

dro-power engineering projects which are, as a rule, of comprehensive importance for these countries' economies.

Technical assistance rendered to the socialist countries in building thermal power stations progressed especially rapidly in the 1970s. During this period considerable thermal power station capacities were put into use, among them large ones with condensation blocks, such as: the Thierbach and Boxberg thermal power stations in the GDR. The Boxberg thermal power station (3,520,000 kW) is one of the largest in Europe operating on lignite.

In 1983 electric power stations constructed with the USSR's technical assistance generated over 50 per cent of the GDR's electric energy. Construction of the Jänschwalde thermal power station (capacity 3 min. kW) with 500,000 kW power units continues. In 1983 the third power unit of this large cooperation project was put into operation.

The Soviet Union has played an important role in creating and quickly developing Bulgaria's power engineering. At present Bulgaria generates more electric energy than Turkey and Greece taken together and in the quantity per capita it is ahead of such an industrial country as Italy. With Technopromexport's technical assistance the following thermal power stations were constructed: Varna (capacity 1,260,000 kW), Maritsa-East III (840,000 kW), Maritsa-East-II (600,000 kW), First Komsomolskaya (500,000 kW), etc. Electric power stations erected and equipped with the Association's technical assistance produce over 50 per cent of Bulgaria's electric energy.

Substantial increase of electric power capacities in Poland was achieved to a great extent due to Soviet technical assistance in building a number of large thermal power stations such as: Turow (1,400,000 kW), Patnów (400,000 kW), Jaworzno (300,000 kW), etc. Of great importance was the commissioning in 1978 and 1979 of two 500,000 kW power units, Poland's largest at the Kozienice thermal power station whose turbo-generator sets were supplied by Technopromexport. The joint construction of 750 kV electric power line (Khmelnitskaya atomic power station in the USSR to Rzeszów, Poland) in which in addition to the USSR and Poland, Hungary, the GDR and Czechoslovakia are participating, will be of great significance for improving Poland's power system now included in the CMEA member-countries' unified power system.

Electrical power engineering is a traditional sector of Soviet-Romanian economic and technical cooperation. The total capacity of electric power stations built under the Association's contracts constitutes one-third of Romania's installed capacities. Soviet equipment generates nearly one half of the country's electric energy which witnesses the supplied power-generating equipment high reliability and its effective use.

Among power-engineering cooperation projects the Iron Gates hydro-engineering complex on the Danube is worthy of special mention. This complex's hydro-electric power station (over one mln. kW) is by right considered Romania's largest power engineering project and reliable source of cheap electric energy. Now Technopromexport is helping construct the Iron Gates II hydro-electric power station, the second one on the Danube. The Mintia-Deva thermal power station whose installed capacity reached 1,260,000 kW after the sixth power unit was put into use is another large Soviet-Romanian cooperated power engineering project. This thermal power station has for already many years been an exemplary enterprise in this industry.

In Yugoslavia Technopromexport rendered technical assistance in building electric power stations (total capacity nearly 4.4 mln. kW) which produce 30 per cent of the country's electric energy.

Over recent years in Yugoslavia 200,000 kW power units were put into operation at the Pljevlja and Bitola thermal power stations as well as a 300,000 kW power unit working at supercritical steam parameters at the Gacko thermal power station and a 135,000 kW power-and-heat unit at the Novi Sad thermal power station. Two 300,000 kW power units at the Ugljevik thermal power station are being constructed. A detailed design for a 500,000 kW power unit for supercritical steam parameters for the Tuzla-B thermal power station has been worked out and a contract on designing the Kovin-I thermal power station comprising four 210,000 kW power units concluded. The construction of the Djerdap I hydro-electric power station (over one mln. kW) on the Danube was completed and that of the second, Djerdap II hydro-electric power station (216,000 kW), is under way.

In the Republic of Cuba the Association helped erect, equip and put into operation the Máximo Gómez thermal power station (600,000 kW) and the Antonio Maceo thermal power station (500,000 kW). Construction of the Havana 1.4 mln. kW thermal power station (three

100,000 kW power units and five 220,000 kW power units) began. A 220 kV unified national power system comprising electric power transmission lines (1,645 km), transformer substations and load-dispatching centres was completed.

Technopromexport continues constructing power engineering projects in Mongolia. Thus the heat-and-electric plant-3 (capacity 110,000 kW) and a starting complex (80,000 kW) at the heat-and-electric plant-4 in Ulan Bator and a heat-and-electric plant (12,000 kW) in Choybalsan were commissioned. In 1984 and 1985 two 100,000 kW power-and-heat units at the heat-and-electric plant-4 and boiler units at the Darhan and Erdenet heat-and-electric plants are to be put into use. In the 12th five-year plan period the construction of the Baganur thermal power station (1,260,000 kW) comprising six 210,000 kW power units will begin. In 1983 electric power stations, constructed in Mongolia with the Association's technical assistance, generated 90 per cent of the country's electric energy.

In Vietnam with Technopromexport's technical assistance over 400,000 kW of power capacities were put into operation. In 1983 they produced 26 per cent of the country's electric energy. The largest Soviet-Vietnamese cooperation power engineering projects are: the Hao Binh hydro-scheme (1,920,000 kW) on the river Black, the Pha Lai thermal power station (660,000 kW) and the Tri An hydro-electric power station (420,000 kW).

In 1983 and 1984 two 110,000 kW power units at the Pha Lai thermal power station were commissioned and the work on the third 110,000 kW power unit is under way; in January 1983 the river Black at the Hao Binh hydro-electric power station was spanned.

To provide the south of Vietnam with electric power the possibility of constructing a thermal power station using oil-processed products is being discussed.

At present the Korean People's Democratic Republic's power engineering sector forms one of its most developed industries thanks to the Association's assistance. Technopromexport helped restore and expand the Sunnhun hydro-electric power station (from 500,000 kW to 700,000 kW), construct the Pyongyang heat-and-electric plant (400,000 kW), the Pukch'ong thermal power station (1.5 mln. kW) and a thermal power station (100,000 kW) near the town of Unggi. In 1983 these electric power stations generated nearly 65 per cent of the country's electric energy. Construction of the Chongjin heat-and-electric

plant (150,000 kW) and expansion of the Puckh'ong thermal power station up to 1.6 mln. kW continue.

The Soviet Union imparts importance to the development and improvement of mutually beneficial trade and economic cooperation on a stable and long-term basis with the Asian, African and Latin American developing countries.

Technopromexport is rendering India assistance in constructing ten electric power stations of nearly 3.5 mln. kW total capacity, 2.1 mln. kW of which are already operative.

Among those functioning are such large ones as the Bhakia hydro-electric power station and the Neyveli thermal power station (600,000 kW each). Now the first stage of the VindhyaChal thermal power station (1.3 mln. kW) with a 400 kV electric power line (length 570 km) is under construction.

In the People's Republic of Bangladesh with Technopromexport's technical assistance the Gorosal thermal power station (110,000 kW) was built which in its technical equipping is one of the country's best. In 1983 the expansion of this thermal power station with two 210,000 kW power units began. When its construction is completed this electric power station will be the largest one in the country.

Electrical power engineering constitutes one-third of the Soviet Union's assistance rendered to Iraq. Large electric power stations (total capacity 1,440,000 kW) were built, among them: the Najibiyah thermal power station (200,000 kW), the Nasiriya thermal power station (840,000 kW) and the Dukan hydro-electric power station (400,000 kW). These electric power stations generated over 45 per cent of the country's electric energy in 1983. The USSR is giving technical assistance in constructing a dam for the Hadithah hydro-engineering complex on the Euphrates.

Under an agreement on further expansion of economic and technical cooperation two thermal power stations (1,200,000 kW and 800,000 kW) are to be built on contract terms as well as the Euphrates hydro-engineering complex which includes a dam and hydro-electric power station (300,000-400,000 kW).

Cooperation in power engineering has an important place in Soviet-Iranian economic ties. Construction of the Ramin thermal power station (1,260,000 kW) comprising four 315,000 kW power units and the Isfahan thermal power station (800,000 kW) with four 200,000 kW power units continues. The Isfahan thermal power station is

being constructed by Technopromexport jointly with Transelectro (Bulgaria) and Budimex (Poland).

In Algeria under Technopromexport's contract the Annaba thermal power station (55,000 kW) was built. The Association signed a contract on constructing the Jijel thermal power station (three 210,000 kW power units). The contract envisages the Association's wide co-operation with local firms manufacturing equipment and performing construction and assembly work. This will be one of the country's largest electric power stations which will increase Algerian electric power stations' installed capacities by 20 to 25 per cent.

In Pakistan the Guddu thermal power station (210,000 kW) was constructed with the Association's participation. At present talks on signing a contract on equipment delivery for the Multan thermal power station (three 210,000 kW power units) are under way.

The Aswan hydro-engineering complex (2,100,000 kW) built in Egypt with Technopromexport's technical assistance is unique not only in its technical solutions but also in the volume of work done. The Aswan hydro-electric power station is a reliable base for the country's further industrialization and development of agriculture. This complex not only controls the river run off but also develops 546,000 hectares of desert lands. To distribute the electric energy generated at the Aswan hydro-electric power station a developed power system comprising a 500 kV electric power line (length 1,800 km) with four large transformer substations was built.

The Aswan project demonstrated the equitable character of cooperation between the socialist and developing countries. This very important economic project is successfully operating and very beneficial for Egypt, as M. Abaza, Minister for Power and Energy of Egypt, stated when interviewed by the *Oktober* magazine.

Of great importance for Syria's economy is the Euphrates hydroscheme with a hydro-electric power station (800,000 kW) constructed with the Association's assistance, which is, according to Hafiz Assad, President of the Syrian Arab Republic, a symbol of eternal Arab-Soviet friendship and an example of fraternal cooperation between the peoples of Syria and the USSR. Today the Euphrates hydro-electric power station is producing almost one-third of the country's electric energy. This hydro-scheme has eliminated the threat of floods forever and the reservoir built (12,000 million cu.m) has sufficient water to irrigate eventually nearly 640,000 hectares of dry lands.

One can say without exaggeration that the Euphrates complex symbolically called Al Thawrah (revolution), is a basic foundation for developing Syria's economy and accomplishing social transformations.

A network of high-voltage electric power lines erected with the USSR's participation and covering the country's entire territory transfers the hydro-electric power stations electric energy to Syria's central and western regions where large industrial and agricultural projects are sited and to important oil-extracting regions in the country's east.

The construction of a re-regulating dam on the Euphrates with the Association's participation (26 km from the Euphrates hydroscheme) which will irrigate tens of thousands of hectares of lands and protect huge river plain areas from spring floods is another example of continued successful Soviet-Syrian cooperation.

Technopromexport helped construct such hydro-power engineering projects as the Mansour-ed-Dahbi and the Moulay Youssef hydroelectric power stations (10,000 kW and 24,000 kW respectively) in Morocco, the Naghlu and Pul-i-Khumri II hydro-electric power stations (67,500 kW and 9,000 kW respectively) in Afghanistan, etc.

Technopromexport also renders technical assistance in constructing separate electric power lines and creating power systems. The total length of electric power lines constructed and being constructed in foreign countries with the Association's assistance amounts to nearly 17,000 km.

Transformer substations and high-voltage electric power lines built with Technopromexport's technical assistance are successfully operating in Egypt, Afghanistan, Morocco, Mongolia, Syria, Vietnam, Romania, etc.

In 1980 the Association completed contract commitments on the "turn-key" construction of a 220 kV electric power line (length 190 km) in Libya jointly with the Bulgarian state economic organization Technoexportstroy. At present three more 220 kV electric power lines (total length 461 km) are under construction on identical terms jointly with another Bulgarian organization—Energoimpex. Technopromexport is helping build thermal power stations in Greece and Finland. The Kerazini thermal power station (200,000 kW) put into commercial operation in 1971 was the first project of Soviet-Greek economic and technical cooperation. Now the Association with the West German firms EVT, Mannesmann, the GDR's foreign trade enterprise Elektrotechnik and the

Greek firm Metka is participating in constructing the Aghios Dimitrios thermal power station (two 300,000 kW power units operating on subcritical parameters) in Greece on "turn-key" terms.

In Finland the Association participated in constructing the Tahkoluoto thermal power station (200,000 kW) and the Raahe heat-and-electric plant (50,000 kW). At present the Ioensu thermal power station is under construction. Technopromexport jointly with the Finnish firms Nokia, Lemminkäinen, Strömborg, Suomi Siemens and others is building large power engineering projects in Greece, Iraq, Iran and other countries.

The Association signed a contract on the delivery from Finland of control facilities for two power units (800,000 kW) at the Perm state regional electric power station. This equipment is being supplied by the Finnish firms Valmet, Nokia, etc.

To fulfil contract commitments Technopromexport sends highly skilled specialists, trains national staff directly at the projects being constructed in the customer's country or at the Soviet Union's power engineering projects.

The team and individual instruction of workers and specialists directly at project construction sites is one of the most effective forms of training. Thus, from the vocational centre set up at the Euphrates hydro-scheme (Syria) over 10,000 specialists have graduated; in Cuba over 5,000 and in Iraq 3,500 persons were trained.

Vocational centres opened in foreign countries have prepared over 70,000 specialists.

Vocational training of foreign workers, engineers and technicians at the Soviet Union's leading enterprises, construction sites and design and research institutes is becoming more and more important for the developing countries. The USSR's vocational centres and enterprises instructed 10,500 specialists in power engineering subjects. They came from Afghanistan, Bulgaria, Hungary, Iran, Yugoslavia, India, Cuba, Mongolia, Vietnam, Syria and many other countries. Education is given by special curricula accounting fully for the subject-matter, as well as the specialists' present skill and experience.

Technopromexport in its cooperation with foreign firms is planning to expand the training of local personnel.

In conclusion it should be mentioned that the CMEA member-countries' Summit Economic Conference held in Moscow once more confirmed their resolution to further deepen and improve mutually beneficial trade, economic, scientific and technical relations with all nations. The documents adopted at this meeting are a programme of Technopromexport's activity on widening its foreign economic ties.

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CEMA/EASTERN EUROPE

CEMA PROBLEMS, PLANS FOR USE OF INDUSTRIAL ROBOTS DETAILED

Moscow EKONOMICHESKIYE NAUKI in Russian No 10, 1984 pp 64-73

[Article by Prof N. Varzin, doctor of economic sciences; and L. Bibik, lecturer and candidate of economic sciences: "Further Development of the Foreign Trade Relations of the Countries of the Socialist Community in the Light of the Top-Level Economic Conference of CEMA Member Countries"]

[Excerpt] The prospects for the intensive development of the economic system of the countries of the socialist community are indissolubly linked with scientific and technical progress. Realizing the extreme importance of its joint management, the top-level ECONOMIC CONFERENCE of CEMA member countries came to a conclusion about the particular urgency of the collective development of a Complex Program for scientific-technical progress for a period of 15 to 20 years.⁵ Its realization will make it possible to create the conditions for the provision of the national economic sectors of these countries with the most up-to-date equipment and to increase sharply the intensity of production.

Not a single country in the world today, however great its scientific-technical potential may be, is in a position to carry out work in all directions of scientific research. This is because of the great number of such directions and is also due to the fact that their implementation requires tremendous physical and intellectual input. Therefore, the systematic unification of scientific-technical potentials and their orientation toward the resolution of the central tasks of science and technology is becoming more and more urgent.

The concentration of the forces of fraternal countries in the main directions of scientific-technical progress is becoming vital. The top-level conference and the 38th Meeting of the Special Session of CEMA (July 1984) held on its results outlined a number of important measures to coordinate elements of economic policy in the area of scientific-technical progress. Multilateral cooperation sets the task of having the countries of the socialist community take up advanced positions in the development and introduction of progressive equipment and technology.

Scientific-technical cooperation between fraternal countries in the contemporary stage, being a complex system of their interaction, includes a great deal, from consultation on basic questions of scientific-technical policy to putting into practice the results of joint research and the coverage in

stages of the whole cycle "science-technology-production-sales-exploitation." In fact, it is becoming possible to combine the advantages of the socialist order with the latest achievements of the scientific-technical revolution. Such a combination, the June (1983) CPSU Central Committee Plenum stressed, is the main way to ensure qualitative progress in the productive forces of each country, especially in connection with the coming technological revolution in many areas of production.

The top-level conference in Moscow paid particular attention to the broad use of electronics in the national economy and to the full automation of production processes. The significant expansion of the production of industrial robots (there are to be 200,000 of them in operation in CEMA member countries by 1990) and the mass utilization of microprocessing technology are to be the basis for solving these tasks. This will have a significant impact on increasing labor productivity in many production sectors, above all in machine building, and will make labor easier and lead to a reduction of the shortage of manpower resources being felt in a number of work specialties. It is difficult to exaggerate the importance of strategically coordinated interaction in the area of science and technology and in the creation and assimilation of promising means of controlling production processes, standardized electronic element bases, industrial robots, and new materials and equipment for electronics and microelectronics as well as in the development and extensive utilization of microprocessors in the economy. All of these directions of scientific and technical progress are now playing a leading role in the scientific-technical revolution, contributing to a sharp decline in the use of manual labor and to an increase in labor productivity.⁶

The realization of the General Agreements on Multilateral Cooperation in the elaboration and organization of the specialized and cooperative production of industrial robots and in the development and broad application of microprocessing technology in the economic system of fraternal countries is an overall economic task, as its resolution requires the participation not only of machine building but also of many other sectors such as metallurgy and chemicals, for example. From such a formulation of the problem arise the large-scale programs and the General Agreements adopted on the basis of the concept for the technical development of robotics worked out jointly at the 36th Meeting of the 1982 CEMA Session.

The implementation of the outlined tasks should lead not only to profound economic and technical but also to social changes in the area of labor productivity and to a substantial reduction in the input of all types of resources, which, in the final analysis, will do even more to strengthen the positions of the socialist community in the world economy. The declaration adopted by the top-level conference says that particular attention is being paid to the development of electronics, microprocessing technology and robotics.

Of course, interaction in the area of robotics and microprocessors presents new and even greater demands on the content and forms of scientific-technical cooperation, and it dictates the necessity of going over to unified standards, especially in setting up reciprocal exchanges. The CEMA member countries are resolving on an international scale and in an integrated manner the problems

in the transition from customary and traditional forms of organizing production to flexible production systems, which are also included among priority directions in the progress of machine building. Here it is essential to stress that the development of robotics and the application of microprocessors in the countries of the socialist community are taking place under social conditions fundamentally different from those in the countries of capital. They are not leading to the loss of jobs and are not demanding that high price that society pays for scientific-technical progress: growing unemployment, higher inflation, and crises. Socialism, in contrast to capitalism, alleviates human labor and does this on behalf of people and using those means that best suit people.

Some Problems in the Comprehensive Intensification of Socialist Integration

In valuing highly the results achieved in cooperation and in strengthening the interaction of fraternal countries, the conference participants concentrated their main attention on questions involved in the further intensification, improvement and increase in the effectiveness of the many-sided ties of fraternal countries. In the contemporary stage, CEMA member countries are working out measures for a fuller realization of the possibilities for increased production efficiency that are found in the coordination of the development and utilization of their production and scientific-technical potentials. The first task here is the exchange of advanced production experience and up-to-date technology, after which arises the necessity of establishing direct (immediate) ties between the producers themselves. This is explained by the fact that cooperation between producers in different countries requires the consolidation of interaction between national reproductive processes, their inclusion in a single production rhythm, as it were. Such an expansion in the economic cooperation of socialist countries, especially its developed integrational forms, creates even more possibilities for saving national labor.

Under the conditions of accelerating scientific-technical progress, this is aided by the restructuring of production with the purpose of lowering its material-intensiveness and of making more economic use of resources as well as by the creation of equipment and technology that save energy, materials and labor based upon intensification and cooperation in production.

The implementation of these tasks requires without fail the strengthening of conformity to plan in the development of cooperation, improvement of its organizational forms, the working out of coordinated decisions for this purpose, and the continual improvement of the economic structure of integration. This, in turn, makes necessary greater adaptation of the national economic planning systems to the requirements for intensifying economic interaction.

The coordination of plans serves as a basic method in organizing cooperation. The placing of reciprocal economic ties on a firm planning basis and the transformation of the coordination of five-year plans into a principal means of forming stable and mutually advantageous relations are an extremely important form of developing processes of integration, the fruitfulness of which has been confirmed by the experience of many years of cooperation of fraternal

countries. As indicated in the declaration adopted by the top-level conference, the coordination of national economic plans is a main instrument in the coordination of economic policy and also serves as a basis for developing national plans and harmonizing them with the Coordinated Plans for Multilateral Integrational Measures (SPMIM). At the present time, a third SPMIM is already being prepared for the years 1986 through 1990. The DTsPS's [long-term target programs for cooperation] play a tremendous role in the joint planning work, as do the bilateral long-term programs for production specialization and cooperation (they have now been worked out until 1990-1995). The coordination of the plans of CEMA member countries permeates their cooperation in all areas of work including production, science, technology, and foreign trade exchange, forming more and more profound, stable and mutually advantageous economic ties between them. Under today's conditions, as the declaration notes, it is necessary for this coordination to be concentrated above all on solving priority tasks.⁷ As applied to our country, a special feature of the coordination of the plan for the years 1986 through 1990 is its ties to the concept of the economic and social development of the USSR through the year 2000 and with the Basic Directions for the Economic and Social Development of the USSR for 1986-1990.

The countries of the socialist community are paying a lot of attention to having balance in their foreign trade turnover as well as to the development of their export potential, especially in the processing sectors of industry. It is also important--and all fraternal countries are interested in this--that the coordination of plans be completed without fail prior to the beginning of the new planning period and that the results of the coordination be secured through suitable agreements and be reflected in national plans.⁸ Such a position makes it possible to ensure reliably the gradual development of the economic and scientific-technical interaction of CEMA member countries.

The mechanism for managing the processes of integration includes both multilateral and bilateral forms of cooperation. As was already noted, particular importance is being attained by cooperation in the area of machine building, which in the national economic complexes of the CEMA member countries is developing at a rapid rate and represents an intricate complex influencing all sectors of the national economy without exception.

In recent times, a number of important agreements have been reached on cooperation in machine building sectors. Particularly outstanding here is the Agreement on Specialization and Cooperation in the Production of Equipment for Nuclear Electric Power Stations. CEMA member countries are carrying out a very large energy program. On the basis of their cooperation, nuclear electric power stations [AES] are being built with an overall capacity of 37 million kilowatts.

Almost 50 industrial associations of Bulgaria, Hungary, the USSR, the CSSR and also Yugoslavia are participating in putting into effect this agreement, which has no equal in the world. With the participation of socialist countries, construction is continuing in the territory of the USSR of large-scale AES's, including the Khmel'nitskaya and Yuzhno-Ukrainskaya stations, each with a capacity of 4 million kilowatts.⁹

With the adoption of the Energy Program in our country, it is seen that the development of cooperation with fraternal countries in the area of energetics is being carried out in a number of directions. The basic directions are: implementation of a complex of measures for the economic and efficient use of energy sources, reduction of the energy-intensiveness of production, and a change in the structure of the production of energy resources. These measures are directed above all to a better satisfaction by each of the fraternal countries of its own power requirements by means of the accelerated development of nuclear energy as well as to an intensification of work in the area of energy, fuel and raw materials¹⁰ in accordance with the DTsPS previously adopted. Foreseen is the installation of high-tension electric transmission lines linking the power systems of the USSR and the European member countries of CEMA.¹¹ The cooperation of fraternal countries in increasing the production of electric energy at AES's is expanding rapidly. The declaration of the Economic Conference held in Moscow notes that CEMA member countries are jointly working out programs for the construction of AES's and AST's [expansion unknown].¹² The realization of the grandiose program for the construction of AES'S demonstrates in practice the indisputable advantages of socialism.

The very large programs implemented jointly by fraternal countries are personified in the main pipelines, electric transmission lines, ore-enriching combines and other large-scale economic projects that have been built. In particular, the early putting into operation of the gigantic trans-Siberian Urengoy-Pomary-Uzhgorod gas pipeline, constructed with the participation of the USSR as well as other CEMA member countries, was socialist internationalism in action.

An important agreement providing for multilateral specialization and cooperation in the development and production of new computer equipment contributed to the formation of the contemporary structure of the national economies. On the basis of joint efforts, the task was successfully solved of providing CEMA member countries with electronic computers constituting a single international system of third-generation electronic computers ("Ryad" type).

The "Interkosmos" program is being implemented successfully, in the scope of which joint flights by cosmonauts of all CEMA member countries are being carried out in Soviet spaceships. The flights of orbiting scientific stations have become regular, and the scientific and national economic effect of their use is being felt in more and more real terms.

As is noted in the declaration of the top-level Economic Conference of the CEMA member countries, the countries of the community are directing their efforts to the solving of many important problems, including improving the structure of metallurgical production, increasing the quality and expanding the assortment of its output, lowering the metals-intensiveness of products, and increasing the output of high-quality steel and other high-quality materials for various sectors of the processing industry. In recent years, based upon combined efforts, new capacities were introduced for the production of ferriferous raw material and iron alloys. Thus, the Erdenet Combine for copper and molybdenum ore enrichment, which is unequaled in Asia, has become an extremely important project in Soviet-Mongolian cooperation. Mutually

advantageous nickel enterprises are being built in Cuba, enterprises that substantially strengthen the material-technical base of the republic.

The declaration also points out the agreement that has been reached on a significant increase in the production and delivery of chemicals. On the basis of mutual collaboration, specialization and cooperation, fuller use will be made of the raw resources of the chemical industry. We note that in most fraternal countries this sector is among the most dynamic in terms of the rate of growth.

In the programs adopted in the congresses of the communist and worker parties of fraternal countries for the development of the national economy and for the increased well-being of the population, an important place is assigned to improving agriculture based upon its industrialization and intensification, including through the help of the intensification of the international socialist division of labor in the agroindustrial area. The industrialization of agriculture in most CEMA member countries is being carried out in cooperation with other socialist states, importing a considerable portion of the equipment, machinery and chemical agents. The fraternal countries are paying a lot of attention to the development of a coordinated agrarian policy. The DTsPS in the area of agriculture and the food industry through 1990, adopted in 1978 by CEMA member countries, may serve as an example here. The meeting of the 37th CEMA Session (October 1983) approved overall cooperative measures providing for an improvement in the supplying of the population of fraternal countries with foodstuffs. CEMA member countries are contributing to putting into effect the USSR Food Program adopted by the May (1982) CPSU Central Committee Plenum.

As the text of the declaration points out, "the conference participants consider the comprehensive development of the sectors of the agroindustrial complex and cooperation in this area to be a task of paramount importance. CEMA member countries are directing their efforts to increasing food production based upon the introduction of progressive technologies and the development and improvement of the material-technical base of agriculture and the food industry and also to increasing reciprocal deliveries of foodstuffs for the purpose of improving the supply and structure of the population's consumption."¹³

The close interaction of CEMA member countries in the development of agriculture has already led to a substantial increase in agricultural output, which increased in fraternal countries by a factor of 1.68 during the years 1960 through 1983 and by a factor of 2.5 for the three decades of the existence of CEMA. With just 10 percent of the world's population, the countries of the community produce approximately one-fifth of world agricultural output.

Among the most important tasks now facing CEMA member countries in the area of the economy and mutual cooperation is the acceleration of the process of equalizing the levels of development in fraternal countries. Only socialism can resolve this task radically and in a historically short time. Indeed, whereas in 1950 the maximum difference in per-capita national income in the European CEMA member countries was 3.2 to 1, and even 5. to 1 for industrial

production and 3.5 to 1 for the size of the consumption fund, by 1979 this gap had declined substantially (1.3 to 1, 1.7 to 1 and 1.5 to 1, respectively).¹⁴ Consequently, the task of equalizing the levels of economic development for the European countries has basically been solved. Contributing to this was the application of the advantages of the international socialist division of labor and of a better combination of national and international factors in economic development. For such countries as Vietnam, Cuba and Mongolia, this task must still be resolved. This is why the countries of the community, as the declaration stresses, consider it their international duty to continue on a fair basis to provide aid to Vietnam, Cuba and Mongolia in accelerating the development and increase in the effectiveness of their national economy, contributing to their broad participation in the international socialist division of labor. As is known, it was with this goal that special positions providing for assistance in advancing the economic system of the non-European countries of the socialist community were included in the SPMIM for 1981-85.

At the same time, in highly valuing the achievements of fraternal countries in intensifying reciprocal cooperation, the participants in the Moscow conference noted that in this very important matter there are still significant reserves, whose mobilization is required for further expansion and intensification of specialization and cooperation in production and to increase the volume of reciprocal trade in the interests of a more efficient utilization of the production and scientific-technical potential. It is acknowledged to be useful to intensify the collective work of the communist and worker parties and of the governments of the CEMA member countries in exchanging mutually interesting experience in economic construction.

The establishment of direct ties between the associations, enterprises and organizations of the cooperating countries is an important direction where even more energetic and effective efforts are needed. In previous stages, when the scope of foreign economic work was relatively small compared with that of today, the participation of enterprises in this work was not obligatory. A very important role in the reciprocal exchange was played by the large volumes of goods sold that are homogeneous in their consumer qualities, particularly raw materials and fuel. It was quite possible to supply them in a centralized manner, without bringing immediate producers into foreign economic operations. But the change in the nature of foreign economic ties, the variety of projects in these ties, and the increase therein of the role of specialization and cooperation objectively require the participation of immediate producers in the international reciprocal economic cooperation of fraternal socialist states.

FOOTNOTES

5. Economic Conference of CEMA Member Countries at the highest level, 12th through the 14th of June 1984, "Dokumenty i materialy" [Documents and Materials], p 21.
6. The meaning of the utilization of robots is seen in an example. One robot in individual operations is capable of replacing up to three workers.

labor productivity thereby increases by no less than 20 to 40 percent, and expenditures for its production pay for themselves in 1 to 3 years. The application of group robots is even more effective.

7. It is customary to separate three groups of priorities: national economic, sectorial and international. They, of course, cannot fail to be interrelated.
8. Economic Conference, op. cit.
9. N.K. Baybakov, "O Gosudarstvennom plane ekonomicheskogo i sotsial'nogo razvitiya SSSR na 1984 god i vypolnenii plana v 1983 godu" [On the State Plan for the Economic and Social Development of the USSR in 1984 and the Fulfillment of the Plan in 1983], Moscow, 1984, p 25.
10. "Osnovnyye polozheniya Energeticheskoy programmy SSSR na dlitel'nyyu perspektivu" [Basic Positions of the Long-Term USSR Energy Program], Moscow, 1984, p 8.
11. Ibid., p 14.
12. Economic Conference, op. cit., p 23.
13. Ibid.
14. "Mirovoye sotsialisticheskoye khozyaystvo: voprosy politicheskoy ekonomii" [World Socialist Economy: Questions of Political Economy], Moscow, 1982, p 206.
15. Economic Conference, op. cit., p 21.

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GENERAL

KAPRANOV OUTLINES AREAS OF COOPERATION WITH TRADE PARTNERS

Moscow SOVIET EXPORT in English No 5, 1984 pp 28-35

[Article by I. A. Kapranov, head of the Economic and Planning Department, USSR State Committee for Foreign Economic Relations]

[Excerpts]

Metallurgy the Main Area of Cooperation

The Soviet Union is helping other countries to promote the key industries. **In the area of non-ferrous metallurgy, it is giving technical assistance to all European socialist countries, Cuba, the DPRK, many developing countries in Asia and Africa, and also to Finland**, building ore mines and concentrating mills, by-product coke plants, blast furnaces and steel making plants and supplying continuous casting machines and rolling mill accessories.

The larger centres of co-operation in the socialist countries include the L. I. Brezhnev integrated iron-and-steel works in Kremikovci and the V. I. Lenin integrated works in Bulgaria, whose rolled stock production is expanding, the former from 1.4 to 3.0 and the latter from 0.6 to 1.0 million tons a year; the

é Marti metallurgical works in Cuba, enlarged to produce annually up to 100 tons of steel; the V. I. Lenin and the integrated steel works in Poland, aggregate annual capacity of 100 tons of steel; the steelworks in Željezno and Zenice, Yugoslavia; in Anshan and Bautou, the People's

The experience gained in the construction and exploitation of non-ferrous metallurgical plants has stimulated a new form of co-operation—joint construction of metallurgical plants in third countries. Czechoslovakia and the GDR, for instance, are designing and supplying rolling mill accessories for plants being built with Soviet assistance in Algeria, Iran, Nigeria, Pakistan and Turkey.

Industrialisation of the developing countries depends largely on their having a metallurgical industry of their own. And the important part played in that respect by Soviet technical assistance is clearly seen from the fact that the iron-and-steel works the Soviet Union helped to build in Asian and African developing countries accounted, at the turn of the 1980's, for as much as 35 and 20 per cent, respectively, of their total output of cast iron and steel.

Ferrous metallurgy is the top priority in economic co-operation between the Soviet Union and India. Work is being completed on building up the capacity of the Bhilai and Bokaro iron and steel works to four million tons of steel a year each. In 1982, these works contributed 38 per cent of India's total output of rolled stock and steel. A third major works, with a design capacity of three million tons of steel a year is now in the process of construction at Vishakhapatnam.

The Isfahan steelworks is the largest industrial enterprise in Iran. It is the only one in the country to have a full production cycle and, together with its coal and raw material sources, provides employment for more than 60,000 workers and office staff. The steelworks at Iskenderun, Turkey, is being enlarged, to boost production from 1.0 to 2.2 million tons of steel. This enterprise accounted for 34 and 20 per cent, respectively of the 1982 national production of cast iron and steel and rolled stock.

An iron and steel works with an annual capacity of 1.5 million tons has been built at Helwan, Egypt. The economies resulting directly from its construction are estimated at 150 million Egyptian pounds' worth of foreign currency which previously was spent on importing metal goods and rolled stock from abroad. The Helwan works contributes 83 per cent of the national output of cast iron and 66 per cent of steel. It has the largest workforce of any enterprise in the country.

A metallurgical works with an annual capacity of 1.3 million tons of steel is under construction by contract at Ajaokuta, Nigeria. Its capacity can be increased to 2.6 and later to 5 million tons. The works is the largest of its kind in Tropical Africa.

By building large metallurgical enterprises the developing countries gain greater economic independence and increase the number of people employed. This enables them to cut down imports of iron and steel and provide what is needed for the development of the manufacturing industry, above all the mechanical engineering and the construction industry.

Utilizing its own vast experience in extracting and processing practically every kind of non-ferrous metal, the Soviet Union is giving technical assistance to 22 countries.

About 95 per cent of Bulgaria's entire non-ferrous metals output comes from enterprises constructed with Soviet assistance. Of the 37 works now under construction, 33 are already turning out goods.

More than 40 per cent of Vietnamese tin is made at the Tin-Tuk integrated works. Another such works is being built under a

compensation agreement in Ngetinh province. The 600,000-ton Birac alumina plant, one of the largest in Europe, and an aluminium plant at Titograd, have been constructed under compensation agreements in Yugoslavia. Accordingly, the national alumina capacity has been more than doubled, aluminium output rising by a quarter.

The Soviet Union and developing countries are co-operating more frequently in non-ferrous metals production. A plant built in India produces 100,000 tons of aluminium and 50,000 tons of rolled products annually, thereby raising the country's aluminium production by almost 30 per cent. A plant in Turkey, the largest of its kind in the Near and Middle East, produces 200,000 tons of alumina, 60,000 tons of aluminium and 25,000 tons of rolled products. It supplies 100 per cent of Turkey's alumina and aluminium requirements and has started exporting its products.

The bauxite complex constructed at Kindia, Guinea, has an annual capacity of 2.5 million tons. This first national enterprise of Guinea's mining industry comprises a mine, a railway, a shipping terminal at Conakry, a housing estate and a local personnel training centre.

An aluminium plant with an output of 166,000 tons went into operation recently in Egypt. Writing about this complex at Nag-Hammadi on November 27, 1983, the Egyptian weekly *Al-Mussawar* described it as "a look at Egypt in the next century". Besides satisfying the home demand, it said, the giant plant is able to export large quantities of aluminium. Output was on a par with the highest world standards: the country was receiving annually over 140 million dollars of much-needed foreign currency.

Solution of the fuel-and-energy problem is now a vital matter for many economies. The Soviet Union offers varied assistance to its foreign partners, helping them to develop the power, petroleum, oil-producing, gas and coal industries.

Some of the power facilities completed or being built in socialist countries with the Soviet Union's technical assistance are of

unique significance. Foremost among them are the 3,500 MW Boxberg thermal power station in the GDR; the hydroscheme on the Danube in the Iron Gates area with a 2,100 MW hydroelectric station constructed jointly by Yugoslavia and Romania, with Soviet assistance; the 1,920 MW Hoabinh hydroscheme in Vietnam; and the 1,600 MW Pukchan thermal power station in the DPRK.

A special place in co-operation between socialist countries is assigned to atomic power development. The Soviet Union has helped to construct the Kozloduj atomic power plant (1,760 MW) in Bulgaria. The Nord atomic power plant under construction in the GDR, has already reached a capacity of 1,760 MW, to be brought up eventually to 3,520 MW. The first power unit (440 MW) has gone into operation at the Paks atomic power plant in Hungary. The plant's planned capacity is 1,760 MW. Two atomic power plants, Bohunice and Dukovany, with an aggregate capacity of 3,520 MW, are under construction in Czechoslovakia. When the programme for atomic power plant construction has been completed the CMEA countries will be saving annually about 70 million tons of equivalent fuel.

The Aswan hydropower complex in Egypt is one of the largest power installations the Soviet Union has helped to build in a developing country. The Aswan High Dam Hydro, which has a capacity of 2,100 MW, has become the centre of an interconnected power system with 500 kV power lines, linking all electric power stations in Upper, Middle and Lower Egypt. The Aswan complex, which cost 320 million Egyptian pounds to build, has already repaid approximately fivefold the capital spent on its construction.

The Euphrates hydropower scheme, with its 800-MW hydroelectric station, built in Syria with the Soviet Union's assistance, is unique in terms of its effect on the national economy. Now the Soviet Union is helping Syria to erect 2,600 kilometres of high-voltage transmission lines which will carry the power generated by the Euphrates hydroelectric station to consumers country-wide.

The Soviet Union has helped to build the 100 MW Naglu hydroelectric station, the largest in Afghanistan. Seventeen electric power stations with a total installed capacity of 6.5 million kW have been built or are being erected in India, with the Soviet Union's assistance. Large hydroelectric stations have been built or are under construction in Algeria, Bangladesh, Ethiopia, Iran, Iraq, Morocco, Pakistan, the People's Democratic Republic of Yemen, Turkey and some other countries.

Petroleum plants constructed with the Soviet Union's technical assistance are supplied with up-to-date refining and cracking equipment for making a wide range of petroleum products. The facilities built in socialist countries include petrochemical plants at Burgas and Pleven, Bulgaria, processing annually 14 million tons of oil; air-vacuum plants in Hungary and Poland, with an aggregate annual capacity of 17 million tons of oil; and a two-million ton refinery in the DPRK. Processed at these plants in 1982 was 100 per cent of oil in Bulgaria, 83 per cent in Hungary, 80 per cent in Poland, and 39 per cent in the DPRK.

The first phase of the refinery at Skoplje, Yugoslavia, went into operation two years ago. It will provide Macedonia with fuel oil, diesel fuel and crude petrol.

The refinery in Aliaga, Turkey, is operating efficiently, exceeding planned output. Its capacity is being boosted from 5 to 10 million tons. Two refineries and two lubricating oil plants have been built in Suez and Alexandria.

More than 45 oil and gas fields were prospected in India, in collaboration with the Soviet Union. Iraq receives all-round assistance in developing its rich oil resources. Construction of the surface facilities there has been completed and oil fields with an aggregate estimated capacity of 46 million tons have been brought into production. Twenty-five oil and gas fields have been discovered in Syria. Thanks to the assistance rendered by Soviet organisations in oil exploration and production, Syria has been able to launch a state oil producing industry with an

annual output of 8—10 million tons. By the joint efforts of Soviet and Afghan geologists, commercial gas finds were made in North Afghanistan. The two gas fields set up with an aggregate output of 4.1 thousand million cubic metres, provide enough gas to meet the home demand and to earn foreign currency from exports.

Soviet technical assistance in the construction of gas and oil pipelines has been of great importance to many developing countries. When the north section of the Trans-Iranian gas pipeline (487 km), and the gas outlet to Teheran, had been constructed, some of the gas burned in flares at the oil fields in South Iran could at last be used profitably. The 540-kilometre long Baghdad-Basra oil pipeline supplies oil products to Central and South Iraq. The Alrar-Hassi-Messaoud gas pipeline, under construction in Algeria, will carry gas to the heart of the country from fields in the southeast, 653 kilometres away.

Efficient exploitation of local solid fuel sources is an important area of co-operation. Large coal mines and open pits are being constructed in Bulgaria; their aggregate annual capacity amounts to 36.3 million tons. Facilities being constructed in Vietnam are already producing 5.8 million tons of coal out of the 16.2 million tons—their annual design capacity. Similarly, the facilities being built in Mongolia are producing so far 4.3 out of the planned 10.1 million tons, and those being built in Yugoslavia are producing 6.9 out of the 12.8 million tons they are eventually to supply. In 1982, the enterprises constructed with Soviet assistance in Mongolia and Vietnam accounted respectively for 82 and 79 per cent of national coal output.

Co-operation in this field has made notable progress in India where coal mining and dressing facilities with an annual output of 3 million tons have been constructed so far and others, with an output of about 29 million tons, are now being designed and constructed with Soviet assistance. Assistance was rendered to Iran in setting up and developing the mines which supply coal to the Isfahan iron and steel works. They contributed 78.6 per cent of national coal output in 1982.

Soviet geologists enjoy a high reputation abroad. In recent years they worked in more than 50 countries. The deposits they discovered have promoted new industries, e.g. the gas industry in the GDR and Afghanistan, the oil industry in India and Syria, the non-ferrous metallurgy industry in Bulgaria and bauxite production in Guinea, and so on.

More than a hundred different mineral deposits have been discovered and explored each in Vietnam and Mongolia, and about 190 in Cuba. Large deposits of iron ore, tungsten, tin and mercury, and complex and non-metallic deposits have been explored in Algeria. A concentrating mill will be constructed to process the plentiful copper resources discovered by Soviet and local geologists at the Ainak field, Afghanistan. Soviet geologists are working successfully in Angola, Congo, Ethiopia, Madagascar, Mali, Mozambique, the People's Democratic Republic of Yemen, and many other developing countries.

Soviet organizations are helping to set up 320 engineering and metal-working plants abroad, 240 of them already turning out finished products. These are machine tools made in China and Vietnam, trucks made in Poland and China, passenger cars made in Bulgaria and Poland, tractors made in China, rolling bearings made in Bulgaria, Hungary, Poland, Romania and China, farm machines made in Bulgaria and Poland, car batteries made in Yugoslavia and the DPRK, and so on. All engineering plants constructed with Soviet technical assistance are operating at a profit.

In 1981—1985 plants for manufacturing diesel engines, files, motor car and tractor spares, and truck repair plants will be built in Vietnam. Engineering plants associated with the sugar industry are being set up in Cuba. Car battery and microelectric engine plants went into operation in 1982 in the DPRK and a bearing plant is under construction there. Two storage battery plants will soon be completed in Yugoslavia. There is growing co-operation on developing automatic pro-

cess and production control systems. Control systems have been completed and put into operation in Bulgaria, Cuba, Czechoslovakia, the GDR and Hungary.

Of the engineering plants constructed in the developing countries, India's are the largest. They include the heavy engineering plant at Ranchi, which supplies much of the industrial equipment for the iron and steel works at Bhilai, Bokaro and Vishakhapatnam. More than 100 Indian mines are equipped with machines made at the mining equipment plant at Durgapur. The Hardwar plant, which accounts for up to 60 per cent of the national output of heavy electrical equipment, provides a reliable base for the development of India's power industry. The leading engineering enterprise in Iraq is the farm equipment factory at Iskanderia, which supplies half of the country's requirement for agricultural machinery. The electromechanical plant at Baghdad turns out 85 per cent of all electric motors, electric pumps and domestic ventilators, and 60 per cent of all transformers made in Iraq.

A car repair plant, built in Afghanistan with the Soviet Union's assistance, is now being modernised.

An engineering plant has been built in Iran. In the Arab Republic of Egypt, a shipyard was built at Alexandria, a plant manufacturing forgings and chains, a machine-tool plant at Helwan, a cutting-tool shop. An electrical equipment plant is in operation in Bangladesh, and a plant making farm implements is operating in Nepal. A ship repair complex has come into operation at Maputo, Mozambique.

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GENERAL

FOREIGN CURRENCY RATES FOR DECEMBER COMPARED

Rates Compared

[Editorial Report] Moscow EKONOMICHESKAYA GAZETA in Russian Number 50, December 1984 on page 22 and Number 52, December 1984, page 20 carries the exchange rates issued by the GOSBANK under the rubric "Bulletin of Exchange Rates of Foreign Currencies" as of 1 December 1984 and 16 December 1984 respectively.

CURRENCY	EXCHANGE RATES IN RUBLES	
	1 Dec.	16 Dec.
Australian dollars per 100	73.59	72.37
Austrian schillings per 100	3.95	3.95
Albanian leks per 100	11.94	11.94
Algerian dinars	16.85	16.85
British pounds sterling per 100	102.68	102.33
Argentine pesos per 100	0.58	0.54
Afghan afghanis per 100	1.67	1.67
Belgian francs per 1,000	13.79	13.79
Burmese kyats per 100	10.16	10.16
Bulgarian levs per 100	105.26	105.26
Hungarian forints per 100	5.65	5.65
Vietnamese dongs per 100	10.47	10.47
Ghanaian cedis per 100	2.20	1.71
Guinean sylis per 100	3.42	3.42
GDR marks per 100	31.25	31.25
FRG deutsche marks per 100	27.77	27.68
Dutch guilders per 100	24.61	24.48
Greek drachmas per 1,000	6.83	6.83
Danish kroners per 100	7.72	7.72
Egyptian pounds each	1.21	1.21
Indian rupees per 100	6.99	6.99
Indonesian rupiahs per 1,000	0.78	0.78
Iraqi dinars each	2.74	2.74
Iranian rials per 100	0.93	0.93
Icelandic kronas per 100	2.17	2.17
Spanish pesetas per 1,000	5.03	5.03
Italian lira per 10,000	4.48	4.48

Yemen, People's Democratic		
Republic dinars each	2.47	2.47
Yemen Arab Republic rials per 100	14.46	14.46
Canadian dollars per 100	64.48	64.95
China, People's Republic yuan per 100	30.70	30.70
Korea, People's Democratic		
Republic wons per 100	69.44	69.44
Cuban pesos per 100	90.00	90.00
Kuwaiti dinars each	2.79	2.79
Lebanese pounds per 100	11.06	9.90
Libyan dinars each	2.81	2.81
Malaysian ringgits per 100	35.10	35.10
Moroccan dirhams per 100	9.36	9.36
Mexican pesos per 1,000	4.18	4.18
Mongolian tugriks per 100	23.92	23.92
Nepalese rupees per 100	5.12	5.12
New Zealand dollars per 100	41.11	41.11
Norwegian kroners per 100	9.80	9.60
Pakistani rupees per 100	5.75	5.75
Polish zlotys per 100	1.45	1.45
Portuguese escudos per 1,000	5.26	5.26
Romanian leis per 100	12.05	12.05
Singapore dollars per 100	39.40	39.53
Syrian pounds per 100	21.54	21.54
Somali schillings per 100	3.28	3.28
U.S. dollars per 100	85.35	85.85
Sudanese pounds per 100	40.64	40.64
Tunisian dinars each	1.04	1.04
Turkish lira per 1,000	2.00	2.00
Uruguayan pesos per 100	1.30	1.19
Finnish markkas per 100	13.51	13.34
French francs per 100	9.07	9.03
Czechoslovak korunas per 100	10.00	10.00
Swedish kronas per 100	9.75	9.70
Swiss francs per 100	33.80	33.58
Sri Lankan rupees per 100	3.27	3.27
Ethiopian birrs per 100	41.56	41.56
Yugoslav dinars per 1,000	4.27	4.27
Japanese yen per 1,000	3.48	3.48

Early December Changes

[Editorial Report] Moscow EKONOMICHESKAYA GAZETA in Russian No 50, December 1984 on page 22 carries a 150 word article by Ye. Zolotarenko entitled "Our Commentary" which states that twenty-five exchange rates were changed by the USSR GOSBANK as of 1 December. Among declines noted were the pound sterling, the French, Belgian, and Swiss francs, the Deutsche mark, the PRC yuan, and the Sudanese pound. The American and Canadian dollars, the Iranian rial, and the Japanese yen rose in value.

The article notes that West European currencies declined while the U.S. dollar rose during the second half of November. The article further states that the dollar rose in spite of lowered U.S. interest rates, continued worsening of the balance of payments, and slowed growth rate of the U.S. economy. Zolotarenko reports that for the first time in two years, the labor productivity in industry and other non-agricultural sectors of the U.S. economy dropped by 0.7 percent during the third quarter.

The price of gold on the world markets is noted to have dropped to 330-335 dollars per ounce as compared with 340-345 dollars per ounce in mid-November.

Mid-December Changes

[Editorial Report] Moscow EKONOMICHESKAYA GAZETA in Russian, Number 52 of December 1984 carries on page 22 a 150 word article by Ye. Zolotarenko entitled "Our Commentary," which states that as of 16 December the USSR GOSBANK altered the exchange rates of fifteen foreign currencies. The French and Swiss francs are noted as continuing to decline along with the Deutsche mark and the pound sterling. The U.S. and Canadian dollars continued to rise.

The slowed activity on the currency exchange market is attributed to anticipation of the New Year. The article notes that there was only a small number of transactions at the largest banks, finance companies, and trans-national firms. The article further notes that there were sharp fluctuations of currency values due to the influence of these transactions, but it was anticipated that the currencies would return to their earlier levels. The currencies of Argentina, Ghana, Lebanon, and Uruguay were cited as exceptions since they were devalued between 7 and 22 percent.

The price of gold on the world market is noted to have dropped to 325-330 dollars per ounce as compared with 330-335 dollars per ounce at the beginning of the month.

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